# Interpreting statements from others: The role of temperament, teasing experience, and social dominance

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.

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**Abstract**

The ambiguity of our language system requires that listeners go beyond the words uttered, integrate contextual information, and recognize speaker cues in order to fully appreciate the intended meaning in messages. Counterfactual verbal irony makes this point salient as the intended meaning is in opposition with the literal words. While past work has examined how contextual factors influence irony comprehension, less is known about how speaker and listener characteristics impact interpretation. Addressing a gap in the literature, this work examined how the social status of the speaker and individual characteristics of listeners (i.e., shyness, history of teasing experiences, perceived social dominance) impacted listeners' interpretation of literal and ironic statements. An undergraduate sample of participants ($N = 90$) completed a series of "I Spy" games and were told that various players (described as either high or low in social dominance) were watching their performance. These (virtual) players provided the participants with feedback on their performance, delivered as either a literal/ironic compliment or criticism. Following each game, participants answered questions about the speaker's belief (assessing comprehension) as well as their impressions of the speaker's attitude, humour, popularity, and desirability as a future social partner. Within this first-person task, the pattern of comprehension was consistent with the existing literature (using third-person tasks) in that ironic statements were more difficult to comprehend than literal ones, especially ironic compliments. The speakers' social dominance was not found to affect how participants interpreted literal or ironic statements. Listeners' self-reported shyness, teasing experience, and perceived social dominance did not influence how speaker beliefs/attitudes were interpreted. However, these characteristics were associated

with perceptions of speaker popularity, such that individuals who are shy, have a history of teasing, or low perceived dominance, tend to view speakers who use critical language as being more popular. Further, those individuals with a history of teasing or high perceived dominance perceived ironic language as more humorous. Although tentative, these findings contribute to a growing literature as to how listener characteristics influence how speakers' intentions are perceived.

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## Literature Review

An important aspect of social development is the ability to navigate diverse conversational exchanges. Successful communication requires more than just comprehending the words uttered by a speaker. Rather, a listener must integrate information from a variety of sources (i.e., context, tone of voice, knowledge of speaker) to fully appreciate the communicative intention beyond the words themselves. Indeed, much of human language is ambiguous and requires that individuals attend to the mental states of their conversational partners in order to resolve such ambiguity (Malle & Hodges, 2005).

Figurative language, which includes similes, metaphors, and hyperboles, is a language form that highlights communicative ambiguity given that the literal meaning of the words differs from a speaker's underlying intention. When interpreting figurative language, it is essential that individuals attend to their conversational partners' cues to identify the intention beyond the literal meaning of the words. Given the ambiguity of this language form, it is unsurprising that interpretations are not exactly the same for all individuals. Many different factors affect a recipient's interpretation of their partner's internal state within a social interaction, such as context, as well as characteristics of both the speaker and listener (e.g., age, language experience, culture, and cognitive differences; Gibbs & Colston, 2012).

Within this literature review I will provide an overview of past work examining the developmental course, relevant theories, and social functions served by one type of figurative language, verbal irony. I will then discuss different factors that may impact perceptions of communicative intent within the context of verbal irony, including

contextual factors, such as the nature of the situation and the characteristics of the speaker, as well as the individual differences of the listener.

**Counterfactual Verbal Irony**

Counterfactual verbal irony, hereafter referred to as verbal irony or sarcasm, is a particular form of figurative language in which the speaker's intention directly contrasts the literal meaning of the words (Katz & Lee, 1993). Verbal irony conveys a degree of social ambiguity since it includes features of both humour and aggression, and may be interpreted in various ways (Shapiro, Baumeister, & Kessler, 1991). Ironic speakers take a social risk since there is additional room for their intentions to be misinterpreted. Though, despite this social risk, ironic comments are made frequently in daily life. Adults use irony in 8% of their conversations with friends and strangers (Gibbs, 2000) and figurative language is used in 94% of emails—although hyperboles are used more often than verbal irony (Whalen, Pexman, & Gill, 2009). Children are often exposed to verbal irony: it is commonly found in children's television programming (Dews & Winner, 1997), within the classroom among their peers (Gibbs, 2000), and within conversations in the family environment (Recchia, Howe, Ross, & Alexander, 2010). Considering the prevalence of verbal irony in everyday conversation and experience, the ability to accurately appreciate the language form is an important aspect of communicative competence.

Similar to comments spoken in a literal fashion, ironic comments can convey both negative intentions (i.e., ironic criticisms, saying "nice job!" after a friend misses when shooting a basketball) and positive intentions (i.e., ironic compliments, saying "that was terrible!" after finishing a delicious slice of cake).

There are different theories posited for how individuals process ironic language. For instance, some researchers argue that ironic and literal comments are processed similarly, in that, regardless of the statement type, the speaker's intention constrains interpretation and primarily what is processed (e.g., Gibbs, 1986). Other theories such as the graded salience hypothesis (e.g., Giora & Fein, 1999) propose that ironic and literal messages activate different cognitive concepts, in which the literal meanings from ironic statements are processed first before recipients later adjust to an ironic interpretation. Regardless of how irony language is processed, there appears to be a characteristic developmental trajectory for comprehending ironic language. Children as young as five or six years old can understand a speaker's belief and intent of ironic *criticisms* on 20-50% of presented stories (Climie & Pexman, 2008; Filippova & Astington, 2008). However, the ability to fully appreciate ironic *compliments* emerges at eight to nine years old (Climie & Pexman, 2008), with many children at 10 to 11 years old still showing difficulty understanding this language form (Pexman, Glenwright, Krol, & James, 2005). Even within adult populations, comprehension of ironic language is not as successful as that for literal statements, though the comprehension of ironic criticisms is better than that of ironic compliments (Mewhort-Buist & Nilsen, 2017). This difference between the comprehension of ironic criticisms and compliments may be due to the frequency with which they are encountered, with ironic criticisms used more often than ironic compliments (Garmendia, 2010).

The discrepancy between the literal word meaning and the speaker's intended message within ironic comments serves a number of social functions. Verbal irony is used to be humorous, to build and maintain close relationships, to mock or tease others,

to lessen the harshness of insults, and to create emotional distance (Dews, Kaplan, & Winner, 1995; Gibbs & Izette, 1999; Pexman, Whalen, & Green, 2010; Pexman & Zvaigzne, 2004). Ironic compliments can be used to convey envy of a listener's accomplishments, or to highlight a recipient's self-criticism or undeserved expectations of failure (Garmendia, 2010). Ironic criticisms are considered less negative than literal criticisms, allowing individuals to maintain their friendships by stating their true negative opinions in a less aggressive manner (Dews & Winner, 1995). These social goals are achieved because the literal meaning of ironic messages is believed to mute the intention of the statements (Dews & Winner, 1995). This muting effect is known as the Tinge Hypothesis, and functions in a similar fashion for ironic criticisms and compliments. As such, ironic criticisms are viewed as less harsh than literal criticisms, and ironic compliments are viewed as less positive than literal compliments. Both children and adults appreciate this muting function of verbal irony, with research showing that children rate ironic criticisms as less mean, and ironic compliments as less nice, than their literal counterparts starting at the age five to six years (Mewhort-Buist & Nilsen, 2013). Adults show similar patterns: speakers of ironic criticisms were perceived as less annoyed than those who used literal criticisms, and speakers of ironic compliments were perceived as less praising than those who used literal compliments (Dews & Winner, 1995).

Research paradigms assessing irony interpretation often utilize third-person perspective tasks. Researchers create a verbal irony task that entails a conversational exchange between two characters in the form of vignettes or puppets (e.g., Filippova & Astington, 2008; Ivanko, Pexman, & Olineck, 2004; Mewhort-Buist & Nilsen, 2013;

2017; Nilsen, Glenwright, & Huyder, 2011; Pexman, Glenwright, Hala, Kowbel, & Jungen, 2006). These short stories result in a positive or negative outcome for one character (e.g., kicking a soccer ball and either making the winning goal or missing the net), and then the other character makes a comment that is delivered in either a literal or ironic manner. Usually, participants are subsequently asked questions about (1) the speaker's belief, whether the speaker believed the context was positive or negative; (2) the speaker's intention, whether the speaker meant to be ironic or literal in their comment; (3) the interpretation of the ironic speaker (i.e., how mean or nice the speaker was, how funny the speaker was, etc.). Within this paradigm, participants are often exposed to four conditions: literal and ironic compliments, and literal and ironic criticisms. The words "compliment" and "criticism" refer to the underlying speaker belief, and the words "literal" and "ironic" refer to the tone of the speaker.

One primary limitation in the field is the reliance on a particular methodology (i.e., third-person tasks) of which results may not hold complete ecological validity to be applied in real-world settings. These types of tasks may also underestimate the impact that individual differences play in irony interpretation. Other methodologies exploring verbal irony usage have involved more naturalistic settings. However, it challenging to create conditions in which participants produce ironic statements (e.g., Pexman, Zdrazilova, McConnachie, Deater-Deckard, & Petrill, 2009). This is especially true considering the role that close relationships play in encouraging irony usage (Pexman & Zvaigzne, 2004). Though infrequently used, some naturalistic research studies have involved video or audio recording interactions between family members and friends (e.g., Recchia et al., 2010).

**Factors Affecting Verbal Irony Interpretation**

In addition to the strong support that paralinguistic cues, such as tone of voice, provide in irony detection/comprehension (Cheang & Pell, 2008; Glenwright, Parackel, Cheung, & Nilsen, 2014), a number of contextual and individual factors affect how individuals interpret verbal irony.

First, the social context in which verbal irony is used influences one's interpretation of ironic statements. For example, the type of relationship between two conversational partners impacts irony understanding. Pexman and Zvaigzne (2004) used written vignettes describing a conversational exchange between two individuals who were described to have different relationships. Results showed that people were better at interpreting verbal irony when the two characters were described as having a close relationship (versus a distant relationship), suggesting that individuals take into account the nature of the relationship between individuals when interpreting verbal irony, such that individuals within a close relationship are able to accurately infer the attitudes of each other.

Research to date has also examined the characteristics of ironic speakers and how they affect the interpretation of verbal irony. For example, Pexman and colleagues (2006) presented children with stories using puppets in which the speaker puppet, who made either an ironic criticism or literal compliment, was described as having mean or nice personalities. Children were asked questions to assess their understanding of speaker belief, and whether they used the trait information to predict a target puppet's behaviour. Results showed that children's comprehension of verbal irony was more accurate when the speaker's personality trait was congruent with the delivered statement. For instance,

children demonstrated better comprehension for ironic criticisms when the speaker was identified as a mean person, and less accuracy when the speaker was described as nice. This suggests that children are able to use a speaker's personality trait information, along with other contextual cues (i.e., words used in the statement, tone of voice) to comprehend verbal irony. In addition, Katz and Pexman (1997) examined the association between occupation and ironic speech, and found that the recognition of irony is sensitive to information about a speaker's sociocultural characteristics. Participants had better irony understanding for statements from speakers who had high-irony occupations (e.g., comedian, comic) than statements made by speakers from high-metaphor occupations (e.g., English professor, poet). The participants also had better memory for statements made by speakers from high-irony occupations.

Reflecting a focus of the thesis (and discussed in detail in a later section), it may be the case that information about a speaker's position on a "social hierarchy" will influence how listeners interpret verbal irony. Social hierarchy refers to the arrangement of individuals along a continuum in which individuals are considered to be more dominant or submissive than others. Social dominance is characterized as the competitive ability to triumph in social conflicts involving resource control and decision-making (Dunbar, 1988). Within the current thesis, the term "social dominance" is used interchangeably with "social status." However, it is important to note these may be different constructs; that is, an individual who has high social status may not necessarily have high social dominance, and may have acquired their status through indirect means (e.g., being selected as socially desirable by others) (Adler & Adler, 1998; Lease, Musgrove, & Axelrod, 2002). An empirical question is whether this social information

impacts how statements are processed. In particular, given the ambiguity inherent in verbal irony (and therefore potentially more breadth for interpretation), it may be that ironic comments are interpreted differently when spoken by individuals with different levels of social dominance.

In addition to contextual factors, the individual characteristics of the person being asked to interpret the statements plays a role in how irony is perceived. Much work has focused on the contribution that socio-cognitive skills play in facilitating verbal irony comprehension. For instance, research shows that individuals with better perspective-taking abilities (or Theory of Mind; ToM) are better able to understand a speaker's intention during ironic exchanges (Matthews, Biney, & Abbot-Smith, 2018). For example, Filippova and Astington (2008) found a strong correlation between second-order ToM and irony comprehension ($r$ = .51); although this correlation decreased when controlling for receptive vocabulary, age, memory, and attunement to prosody (i.e., rhythm and intonation of language). Similarly, Nilsen and colleagues (2011) found that being able to attend to another's mental state allows school-aged children to appreciate how a listener would interpret ironic language (based on what that listener did/did not know). Past work involving individuals with ToM deficits (i.e., people with autism, adults with brain damage to the prefrontal regions) offers further evidence that poor ToM abilities are associated with weaker irony comprehension (Happé, 1993; McDonald, 2000).

Linguistic ability has also been shown to play an important role in supporting one's understanding of verbal irony (Filippova & Astington, 2008), along with well-developed executive functions (Hala, Pexman, Climie, Rostad, & Glenwright, 2010). For

example, past work has found that working memory (Filippova & Astington, 2008) and inhibitory control (Caillies, Bertot, Motte, Raynaud, & Abely, 2014) are associated with children's understanding of ironic statements. Additionally, studies involving adult patients with right hemispheric brain damage, who often experience pragmatic language deficits, have found a relationship between executive functioning and verbal irony understanding (Martin & McDonald, 2006).

Although there is work on how socio-cognitive skills influence irony understanding, less work has examined how an individual's socio-emotional characteristics influence irony interpretation. To speculate about possible associations between socio-emotional features and irony comprehension, it is useful to consider an individual's social environment. Nilsen and Fecica (2011) suggested that an individual's social experience is important to their ability to attend to the mental states of others during conversational exchanges. Individuals who engage in more communicative interactions are given more opportunity to learn about others' internal mental states (Nelson, 2005), and thus may be better at perspective-taking tasks. As such, individuals who experience lower *quantity* or *quality* of social interactions may experience deficits in their ability to attend to others' mental states, which may in turn impact their ability to accurately comprehend irony.

One socio-emotional characteristic of interest is shyness. Shy individuals may experience lower *quantity* of social interaction given that they tend to avoid unfamiliar peers and speak less during social interactions (Asendorpf, 1990). The timing of shyness development may be important in how it affects the quantity of one's social interactions. Researchers propose that fearful shyness, which involves fear and distress in response to

social novelty, occurs earlier in development than self-conscious shyness, which manifests as embarrassment and anxiety when exposed as a social object (Buss, 1986a,b). As such, it may be that fearful shyness leads to reduced social exposure, and thus individuals with fearful shyness have less experience with accessing conversational partner's mental states through various communicative acts. An additional socio-emotional characteristic of interest is one's history of negative peer interactions; individuals with negative peer experiences (such as bullying) have a lower *quality* of social interactions. Through increased negative interactions, individuals may develop biases as to how the intentions of others are processed. These two characteristics will be discussed in turn; first, each trait will be described, and then there will be a review of the literature regarding associations between each characteristic and language/communication.

**Shyness**

Shyness is a temperamental style that is often characterized by being quiet, vigilant, and behaviorally subdued when exposed to novel stimuli. The developmental progression of shyness often begins in infancy, initially demonstrated as behavioural inhibition (Volbrecht & Goldsmith, 2010) and later on presenting as feelings of embarrassment, fear of rejection, and general negative biases (Asendorpf, 1990). Individuals who are high in shyness tend to avoid unfamiliar peers, are less likely to initiate social interactions, and speak less during conversations (Asendorpf, 1990; Asendorpf & Meier, 1993). As such, this temperamental style may be associated with reduced social exposure that would usually be in place to support communicative development.

Though shyness is not considered to be pathological, it is associated with increased risk for a number of negative outcomes such as difficulty building and maintaining strong positive relationships, loneliness, depression, and low self-esteem (Asendorpf, 1990; Booth-LaForce & Oxford, 2008). Although considered typical behaviour for children and adults, individuals with extreme shyness may be characterized as having social anxiety if it is impairing enough to their functioning. In fact, temperamental or trait shyness is a significant risk factor for social anxiety (Pickard, Rijsdijk, Happé, & Mandy, 2017) and research suggests that shyness and social anxiety may exist along a continuum (Brook & Willoughby, 2019; McNeil, 2001). As such, studies examining social anxiety are relevant to consider when discussing the communicative competence of shy individuals.

Individuals with elevated shyness or social anxiety have been found to exhibit certain interpretative biases, leading them to see ambiguous stimuli in a more threatening fashion. For instance, children who are shy or socially anxious tend to interpret ambiguous social situations in a more hostile way than their non-anxious peers, and, in turn suggest more avoidant responses (Banerjee & Henderson, 2001; Chorpita, Albano, & Barlow, 1996). There are consistent findings within the social anxiety literature, for example, Constans, Penn, Ihen, and Hope (1999) found that adults with social anxiety interpreted vignettes depicting ambiguous social interactions as more negative than non-anxious individuals. In addition, individuals high in social anxiety exhibited a lack of positive bias and the presence of a negative bias in the response selection and generation phases of a sentence completion task (Huppert, Pasupuleti, Foa, & Mathews, 2007). Such

biases in processing social information may too be demonstrated in the communicative domain.

**Associations between shyness and language/communication.** Much of past work examining associations between shyness and communication has been within the developmental literature; as such, relevant results from studies exploring communicative development in shy children will be discussed. Although there are mixed findings, research in the field has found that shy children have language skills that differ from their same-age peers. For instance, shyness is associated with learning disorders such as specific language deficits (Stanton-Chapman, Justice, Skibbe, & Grant, 2007), and shy children have lower performance on receptive and expressive language tasks than their non-shy peers (Evans, 1996). Coplan and Weeks (2009) found that pragmatic language abilities are negatively correlated with shyness levels at the start ($r$ = -.25) and end ($r$ - -.19) of the school year, controlling for parental education; shy children were less competent in using social contextual cues to appropriately respond to common social scenarios. Further, pragmatic language skills were found to play a protective role for shy children in their socio-emotional adjustment. For children with weaker pragmatic language skills, shyness was associated with negative socio-emotional outcomes such as loneliness and social withdrawal. This association did not emerge for shy children with high pragmatic language abilities, suggesting that for shy children, pragmatic language may serve as a buffer against negative social adjustment. Cheung and Elliot (2017) reported similar results in their study involving shy children; those with higher pragmatic language skills were rated by their teachers as more well-liked by their peers. Although communicative difficulties are not universal in shyness / social anxiety, research suggests

that communicative deficits may underlie the development of social anxiety for a particular subgroup of individuals with the disorder (Pickard et al., 2017).

Given the negative social biases and potential pragmatic language difficulties associated with shyness (Banerjee & Henderson, 2001; Coplan & Weeks, 2009), the interpretation of ambiguous language, such as verbal irony, may also differ with varying levels of shyness. Mewhort-Buist and Nilsen (2017) explored how individual differences, namely trait shyness, influenced adults' interpretations of ironic statements. Participants were shown vignettes in which two individuals had a communicative exchange within a positive or negative context, and the speaker made a literal or ironic comment. The participants were asked about their interpretation of the scenarios and statements. Results showed that shy adults did not have trouble correctly interpreting a speaker's intention for ironic comments. However, they rated the attitude of ironic speakers as meaner than did the adults lower in shyness. Similar methodologies with a child sample have yielded consistent results, showing that shy children (8-12 years) rate ironic speakers as meaner than do their non-shy peers (Mewhort-Buist & Nilsen, 2013). Thus, across the developmental span, shy individuals show more negative interpretations of the intentions of ironic speakers, at least in the context of a third-person perspective task.

**Peer Experiences**

Negative peer experiences (also referred to as 'peer victimization' or 'bullying') may include intentional and harmful interpersonal acts of overt (physical: kicking, pushing, shoving, hitting) and covert (relational: teasing, spreading rumours) bullying. A target of bullying has been characterized as a frequent recipient of overt/covert aggressive behaviour from one or more peers over time (Ostrov & Godleski, 2007). Among adult

Canadians, 38% of males and 30% of females reported having experienced occasional or frequent bullying during their school years, and 47% of Canadian parents reported having a child who is a target of bullying (Canadian Bullying Statistics, 2012). Bullying is not only implicated in school-aged children; 40% of Canadian workers experience bullying on a weekly basis (Canadian Bullying Statistics, 2012).

A host of negative socio-emotional outcomes are associated with negative peer interactions. During early childhood, targets of bullying experience peer rejection, loneliness, and a lack of prosocial behaviour (Ostrov & Godleski, 2007). In middle childhood, these individuals are more likely to experience difficulties related to peer rejection, social anxiety, social avoidance, and loneliness (Ostrov & Godleski, 2007). The effects of frequent bullying are detrimental even 40 years after the experiences (Wolke & Lereya, 2015). Targets of victimization were consistently found to be at a higher risk for internalizing disorders in adulthood, including diagnoses of anxiety disorder and depression (Wolke & Lereya, 2015).

Similar to shyness, past work examining past peer experiences has primarily been found within developmental research; as such, relevant results from child studies exploring the influence of peer interactions on communicative development will be discussed. Negative peer experiences are associated with impairment in a number of socio-cognitive abilities. Individuals who have difficulty detecting the intentions of other people may be more susceptible to manipulation by others (Sutton, Smith, & Swettenham, 1999). In addition, individuals who have been bullied tend to have impaired empathy (Malti, Perren, & Buchmann, 2010) and negative peer experiences lead individuals to be less attuned to and less interested in others' emotions over time.

Moreover, studies show that being teased contributes to the development of negative schemas and dysfunctional cognitions; individuals who have been victimized score high on interpretations of hostility, anger, and retaliation (Camodeca & Goossens, 2005; McCabe, Miller, Laugesen, Antony, & Young, 2010). As such, it may be the case that individuals who have a history of negative peer experiences enter social interactions with pre-existing negative biases that affects how they interpret and respond to others' communicative language (i.e., Social Information Processing Theory, Crick & Dodge, 1994). Interpreting a situation or conversational partner to have hostile or threatening intentions is likely to lead to aggressive responses (i.e., Hostile Attribution Bias, Crick & Dodge, 1996). Although much of the research on Social Information Processing Theory and the Hostile Attribution involves child samples, studies have shown similar results with adults (e.g., Epps & Kendall, 1995).

**Associations between negative peer experiences and language / communication.** While victimization contributes to the formation of social biases, these experiences are also associated with language impairment. Namely, language deficits negatively influence children's ability to interact with their peers (Brinton & Fujiki, 1999; Hadley & Schuele, 1998), and thus may put them at risk as targets of bullying and social rejection. This being said, Lindsay, Dockrell, and Mackie (2008) explored the susceptibility to social problems in children with language difficulties, and found no significant correlation between victimization and language ability. However, the researchers speculated that children with specific language impairments might have under-reported the frequency of negative peer interactions because they lacked awareness of the salience of these interactions.

Together, work in this area suggests that language impairments may lead to negative peer experiences, although the relationship is likely to be bidirectional. Consequently, those who have been victims of bullying may also subsequently develop language impairments. However, this has yet to be explored in research and much of the literature has found associations between language deficits and victimization. For example, Black and Logan (1995) examined how peer experiences shaped children's communicative styles by studying dyadic conversations. Results showed that children socially rejected by peers made less competent social contributions in social interactions such as non-contingent responses and less explanations in conversations. During play, targets of victimization were also more likely to make demands and less likely to offer suggestions. In addition, Mewhort-Buist, Nilsen, and Bowman-Smith (2019) examined how children's peer experiences impact communicative choices. They found that those with a history of negative peer experiences were more likely to endorse unskilled responses such as telling the truth following someone's negative performance. These results show that these individuals may be less sensitive to the social norms surrounding social blunders, such as avoiding drawing attention to someone's mistake. Together this work points to associations between negative peer experience and communicative competence.

However, little is known about how peer experiences shape how individuals interpret ambiguous language, such as verbal irony. Verbal irony serves several social functions that may be prevalent in victimization, such as to mock or tease others (Pexman et al., 2010) and social bullying (Sheehan & Jordan, 2002). Although it has yet to be studied, it may be that targets of victimization, with associated weaker socio-cognitive

skills, have more difficulty comprehending irony. Moreover, it may be the case that the negative social biases associated with adverse peer experiences result in more negative interpretations of ironic speakers.

**Interim Summary**

In sum, while much work has charted the developmental course of irony understanding and a number of contextual influences, much less work has examined associations between individual characteristics of a listener and irony interpretation. Of particular interest are shyness and negative peer interactions due to their impact on one's social environment (i.e., lowered quantity and quality of social interactions, respectively) and interpretation of communicative intentions. However, how an individual interprets verbal irony may be a result of both their own characteristics as well as the characteristics of the speaker, or an interaction between both. Of particular interest is whether the influence of individual differences in shyness and peer experiences differs when statements are delivered by speakers who are high versus low in social dominance. Below, research on social hierarchy will be presented, followed by previous work examining associations between shyness/peer experiences and social hierarchy.

**Social Hierarchy**

As mentioned briefly above, social hierarchy arranges individuals along a social ladder, such that an individual at a higher position (i.e., high social dominance) holds the competitive ability to triumph in resource control and decision-making (Dunbar, 1988). Individuals lower in social rank have limited access to social resources (e.g., a promotion at work, or a romantic partner), suggesting that one's social status provides exposure to different types of social experiences. It may be that these social encounters vary because

of how others engage in the interactions; that is, individuals may behave differently towards their social partner depending on their position on the social hierarchy.

Research shows that individuals may unintentionally exhibit a more positive bias towards individuals who are high in social dominance (Jost, Pelham, & Carvallo, 2002). Individuals with higher social rank are considered socially central, and thus receive more attention from their peers and are evaluated more favorably as potential social partners (Jost et al., 2002; La Freniere & Charlesworth, 1983). Individuals also perceive people with high social dominance as more competent than those with low social dominance despite their actual competence, due to their confidence and initiative-taking behaviours (Anderson & Kilduff, 2009). A positive bias towards individuals of high social dominance likely stems from their ability to control resources to achieve a desired goal in a peer group—even if doing so requires aggressive behaviour (Charafeddine, et al., 2016). In fact, it is viewed as more acceptable for those of high social rank to engage in aggressive behaviour than those of low social status (Adams, Bartlett, & Bukowski, 2010). Thus, conflict with people of high social rank may be considered more harmful than those with people of low social rank, since offending an individual of high social dominance may lead to limited access to resources, ostracism, or even physical harm (Gilbert, 2001). The consequences that follow conflict with individuals low in social dominance do not hold the same stakes given their lack of social power. Individuals may be more wary of how they interact with those higher in social status and take precautions to avoid social conflicts with them. As such, interpersonal interactions differ depending on a social partner's position on the social hierarchy.

It may be that communicative utterances from individuals high in social dominance are viewed differently than those from individuals low in social dominance, particularly for ambiguous language. For instance, riskiness of conflict with an individual with high social rank may lead one to overestimate how negative their statements are, in order to ensure social safety and avoidance of harmful outcomes. Alternatively, socially risky language forms such as irony may be perceived as more socially appropriate when delivered by an individual who is high in social rank (versus low in social rank). In addition, how statements from speakers with high/low social dominance are interpreted may depend on a recipient's own personal characteristics. Two characteristics of interest (shyness and negative peer experiences) are examined below, in relation to their interaction with social dominance.

**Shyness and social hierarchy.** Given the lack of research looking at the association between shyness and social hierarchy, studies from the social anxiety literature is relevant in this section.

A notable characteristic of individuals with social anxiety is their high sensitivity to social hierarchy information when related to themselves and others. Gilbert's (2001) evolutionary model of social hierarchy and social anxiety proposes that individuals with social anxiety perceive themselves as low in social rank. Individuals high in social anxiety also engage in more submissive, and less dominant behaviours than those low in anxiety, likely to avoid conflict with those high in social dominance (Gilboa-Schechtman et al., 2017; Heerey & Kring, 2007; Rodebaugh, Bielak, Vidovic, & Moscovitch, 2016; Walters & Hope, 1998). Additionally, people with social anxiety are sensitive to information about others' social rank, in that they rate characters high in dominance as

more dominant than do non-anxious individuals (Aderka, Haker, Marom, Hermesh, & Gilboa-Schechtman, 2013; Haker, Aderka, Marom, Hermesh, & Gilboa-Schechtman, 2014). Individuals with social anxiety also request less information about characters before assigning social ranks, and make more revisions in their ratings after being given additional information (Aderka et al., 2013; Haker et al., 2014). Thus, when assigning social rank to others, individuals with social anxiety tend to over-rank people with high social dominance, and are highly sensitive to cues of social status. The salience of social rank information allows individuals with social anxiety to detect their social partner's dominance, even if it is an overestimation.

Thus, within the context of interpreting statements from others, it may be that shy individuals interpret communicative intentions of ironic speakers as more negative than non-shy individuals (consistent with Mewhort-Buist & Nilsen, 2017), and further, these social biases may interact with the social dominance of the speaker. That is, negative social biases towards ironic speakers may be exacerbated when the speakers are described as high (versus low) in social dominance, or, it may be that speakers described as high in social dominance are perceived more positively than those low in social dominance.

**Negative peer experiences and social hierarchy.** There is a paucity of research exploring how a history of negative peer experiences influences the interpretation of social dominance information. However, social status is an important contextual cue within peer interactions such that exposure to victimization differs according to one's position on the social hierarchy. Targets of victimization are often individuals lower in the social hierarchy, since they are considered easy targets for aggression (Prinstein &

Cillessen, 2003). Those who are low in social rank may be perceived as easier targets and are picked on by individuals with high social dominance as a signal of their high social power (de Bruyn, Cillessen, & Wissink, 2010).

Social hierarchy information pertaining to oneself appears to be salient to those who have had negative peer experiences. For example, children with negative peer interactions are sensitive to information confirming their own low social status (i.e., how disliked they are; Cillessen & Bellmore, 1999). However, little is known about how one's negative peer experiences influences the interpretation of others' social dominance. The literature shows that individuals with a history of victimization are often targeted by others higher in social dominance (de Bruyn et al., 2010), and thus may develop negative social biases towards these individuals (though see work by Prinstein & Cillessen (2003) for evidence that individuals with lower levels of social dominance also demonstrate bullying behaviour). Past work suggests that victimization plays a role in perceiving popular individuals as more threatening, although this pattern emerged only for young females (Hunter, Boyle, & Warden, 2007). Alternatively, it may be that individuals with victimization experience perceive those high in social dominance in a more positive light. Consequently, individuals who have experienced peer victimization may interpret the communicative intentions of speakers differently depending on whether the speakers are high versus low in social status.

**Summary and Future Directions**

Taken together, work in the verbal irony literature has explored a number of contextual factors that influence irony interpretation. The characteristics of the ironic speaker have been found to be an important cue when interpreting ironic comments (e.g.,

Katz & Pexman, 1997; Pexman et al., 2006). However, the social dominance of the speaker has not been studied in relation to perceptions of verbal irony. Given the differential social power held by individuals high in social dominance, it may be that their social partners interpret their statements differently than if the statement was delivered by an individual low in social dominance. For instance, given that high social rank is associated with an overall positive bias, and socially aggressive behaviour is seen as more acceptable when from an individual high in social rank, statements from individuals high in social dominance may be interpreted as more positive (e.g., more nice, more funny, etc.). Alternatively, due to the greater social influence of high ranked individuals, statements may carry more weight and thus statements from those high in dominance may be interpreted as more negative (e.g., more mean, less funny, etc.). Regardless of the direction of the influence, such biases may be more pronounced when interpreting ambiguous language, such as irony (versus literal statements), given that there is more room for interpretation. Moreover, it may be that the salience of the social dominance of the speaker is dependent on the characteristics of the listener.

While much work has investigated the cognitive skills associated with verbal irony interpretation, individual differences in social characteristics have received less attention. It may be the case that individuals who have elevated levels of shyness or increased negative peer experiences interpret the intentions of speakers, particularly ironic speakers, differently, due to the associated social biases. Additionally, social rank is a salient social cue for individuals who are shy and have negative peer experiences, and, as such, these individuals may exhibit high sensitivity or biases when interpreting statements from speakers with high versus low social dominance. It is hypothesized that

individuals who are shy or who have had teasing experience will generally interpret ironic language in a more negative fashion, and this will be further exacerbated when speakers are described as high in social dominance.

## Introduction

Successful communication requires more than just comprehending the words uttered by a speaker; rather, a listener must integrate information from a variety of sources (e.g., context, tone of voice, knowledge of speaker) to fully appreciate the communicative intention beyond the words' literal meaning. Indeed, much of human language is ambiguous and requires that individuals attend to the mental states of their conversational partners in order to resolve such ambiguity.

Counterfactual verbal irony, henceforth referred to as verbal irony or sarcasm, is a form of figurative language which highlights communicative ambiguity given that the speaker's intention directly contrasts the literal meaning of the words (Katz & Lee, 1993). When interpreting verbal irony, it is essential that individuals attend to their conversational partner's cues as well as the situation to identify the intention beyond the literal meaning of the words. Despite its risk for misunderstanding due to the increased ambiguity, this language form is used frequently in conversations within family, friends, strangers (Gibbs, 2000; Recchia et al., 2010), and within emails (Whalen et al, 2009).

Verbal irony can be used to serve a number of social functions. The discrepancy between speaker intention and the literal words enables ironic comments to convey either negative intentions (i.e., criticisms, saying "nice job!" after a friend misses when shooting a basketball) or positive intentions (i.e., compliments, saying "that was terrible!" after finishing a delicious slice of cake). In this way, verbal irony can be used to simultaneously convey both humour and aggression (Shapiro et al., 1991). It can also be used to lessen the harshness of insults and create emotional distance (Dews et al., 1995). These social goals are achieved because the literal meaning of ironic messages is thought

to mute the intention of the statements (Dews & Winner, 1995), making ironic criticisms less "critical," and ironic compliments less "complimentary," than their literal compliments. Past work has found that by the age of five or six years old, children are able to appreciate ironic criticisms, and by eight or nine they understand ironic compliments (Climie & Pexman, 2008, Filippova & Astington, 2008). For adults, comprehension of literal comments is typically better than ironic comments, and ironic criticisms are easier to understand than ironic compliments (Mewhort-Buist & Nilsen, 2017).

There are different theories as to how ironic language is interpreted. Gibbs (1986) argues that ironic and literal statements are processed the same way, in which only the speaker's intention is processed regardless of the statement type. Other theories such as the graded salience hypothesis (e.g., Giora & Fein, 1999) propose that ironic and literal messages are interpreted differently, in which the literal meanings of ironic statements are processed before the ironic understanding.

As may be expected given the ambiguity of verbal irony, a number of different factors affect the interpretation of this language form. That is, individuals can form various perceptions of ironic language based on a number of internal or external factors (e.g., age, culture, context, etc.; Gibbs & Colston, 2012). However, while there is a rich history of verbal irony research in general, there is a relative paucity of work examining how contextual and individual factors influence irony interpretation. The present work seeks to address this gap through an examination of how the characteristics of the speakers may impact how irony is interpreted, as well as how the individual

characteristics of the listeners (i.e., participants) impact interpretations. These factors will be considered in turn.

With respect to speaker characteristics, it has been found that individuals expect verbal irony to take place in certain social contexts (i.e., who is interacting). For example, Pexman and Zvaigzne (2004) found that relationship cues were important when interpreting verbal irony. That is, people were better at interpreting verbal irony when the social partners were described as having a close relationship (versus a distant relationship). Further, speaker characteristics, such as personality traits (Pexman et al., 2006) and occupation (Katz & Pexman, 1997) affect how irony is interpreted. Past work revealed that verbal irony comprehension was more accurate when the ironic speakers were described as mean (Pexman et al., 2006), and as having high-irony occupations (e.g., comedian, comic) (Katz & Pexman, 1997). Of interest in the present work is the degree to which the social status of the speaker may impact the interpretation of verbal irony.

An individual's social status may be viewed along a hierarchy or social ladder, such that an individual of high social status holds the competitive ability to triumph in resource control and decision-making (Dunbar, 1988). According to the Social Dominance theory, individuals with high and low social rank possess differential amounts of social power (Sidanius & Pratto, 2001), which exposes them to different types of social experiences and interactions. Moreover, others' perceptions may be influenced by social status. More specifically, individuals unintentionally exhibit a more positive bias towards individuals who are high in social dominance/rank (Jost et al., 2002). For example, Anderson and Kilduff (2009) found that individuals with high social

dominance are perceived as more competent by their group members, despite their actual competence. Individuals with high social rank are considered socially central, and thus receive more attention from their peers and are evaluated more favorably as potential social partners (Jost et al., 2002; La Freniere & Charlesworth, 1983). This positive bias towards individuals high in social dominance likely stems from their ability to control resources to achieve a desired goal; however, resource control may require individuals to engage in aggressive behaviour (Charafeddine, et al., 2016). In fact, it is more acceptable for those of high social status to engage in aggressive behaviour than those of low social status (Adams et al., 2010).

Thus, it may be the case that listeners infer the communicative intentions of individuals with high versus low social status differently, and particularly when speakers deliver ambiguous language that can have various interpretations. That is, it may be that verbal irony, which can involve an aggressive undertone (Shapiro et al., 1991), may be viewed as more acceptable or positive when delivered by a speaker high in social dominance. Alternatively, verbal irony delivered by a speaker with high social rank may highlight the aggressiveness of the language form, given that conflict with those high in the social hierarchy may lead to adverse social consequences such as ostracism and less access to resources (Gilbert, 2001). This notion reflects the first aim of the research study, namely investigating how literal and ironic statements directed at a listener are interpreted, and whether such interpretations differ based on the social dominance of the speaker.

Returning to the discussion regarding factors influencing irony interpretation, the characteristics of the listeners also play a role. For example, studies have shown that

listeners who have more advanced socio-cognitive skills are better able to detect and comprehend verbal irony. Skills that have been identified as supporting verbal irony comprehension include perspective-taking ability (Filippova & Astington, 2008; Nilsen et al., 2011), linguistic ability (Filippova & Astington, 2008), and executive functions, such as working memory and inhibitory control (Caillies et al., 2014; Filippova & Astington, 2008; Hala et al., 2010).

In addition to cognitive skills, variations in socio-emotional functioning impact irony comprehension. Studies show that children with Attention-Deficit Hyperactivity Disorder (ADHD) have poorer understanding of ambiguous social situations and subtle forms of sarcasm (Ludlow, Chadwick, Morey, Edwards, & Gutierrez, 2017). According to theories of communicative perspective-taking, an individual's social environment is an important factor in how individuals infer the communicative intentions of others (Nilsen & Fecica, 2011). Individuals with more social exposure would have more opportunity to learn about others' mental states (Nelson, 2005). As such, variation in the *quantity* or *quality* of social interactions may be associated with differential interpretations of a speaker's intentions, particularly within ambiguous language. Building on this notion, the second aim of this study is to study whether characteristics related to social experiences, specifically shyness and negative peer interactions, influence how communicative intentions behind literal and ironic language are interpreted.

Shyness is a temperamental style that is associated with less exposure to social interactions; research has found that, although individuals who are shy tend to behave comparably to their non-shy peers when around familiar people (Asendorpf & Meier, 1993), these individuals tend to avoid unfamiliar peers, are less likely to initiate social

interactions, and speak less during conversations in unfamiliar situations (Asendorpf, 1990; Asendorpf & Meier, 1993). Although shyness is not considered to be pathological, temperamental or trait shyness is a significant risk factor for social anxiety (Pickard et al., 2017) and research suggests that shyness and social anxiety may exist along a continuum (Brook & Willoughby, 2019; McNeil, 2001).

Shyness has been associated with biases in processing social information. For example, shy children interpret ambiguous social situations in a more hostile or threatening fashion (Banerjee & Henderson, 2001). Similarly, adults with social anxiety view mildly negative social interactions as more overtly negative (Stopa & Clark, 2000). Research investigating the ability to reason about another's mind found that individuals with elevated social anxiety tend to make over-mentalizing errors when interpreting the mental states of others (Hezel & McNally, 2014; Washburn, Wilson, Roes, Rnic, & Harkness, 2016). That is, they attributed more intense emotions and greater meaning to others' emotions and thoughts than individuals without social anxiety. Thus, the communicative intentions of others may too be interpreted in a more negative way, particularly for ambiguous language since there is more room for different interpretations. Indeed, past work has found that adults with elevated traits of shyness were showed to be comparable to their non-shy peers when comprehending irony, but reported that ironic speakers were meaner, particularly when making ironic compliments (Mewhort-Buist & Nilsen, 2017). Similar findings were demonstrated in a school-age population, albeit for ironic criticisms (Mewhort-Buist & Nilsen, 2013). That is, children with elevated shyness were able to comprehend the beliefs of a speaker successfully, but saw the intentions behind the ironic language as meaner. These researchers reason that

when faced with both positive and negative information (as with ironic language), individuals with elevated shyness may attend more to the negative information, thereby attributing more hostile intentions. However, past work in this area has involved third person perspective tasks where the individual is not embedded within the interaction, but is merely an observer (e.g., Mewhort-Buist & Nilsen, 2013; 2017). It remains to be determined how an individual's level of shyness is associated with interpretations of ironic statements that are directed at them.

While shyness influences one's *quantity* of social exposure, in that individuals tend to withdraw from social interactions, particularly novel ones, the *quality* of interactions individuals experience may also shape how communicative intentions are interpreted. Negative peer experiences (henceforth also referred to as "peer victimization") include acts of overt and covert bullying.

Repeated exposure to victimization leads to various socio-cognitive deficits (Malti et al., 2010; Sutton et al., 1999) and negative social biases. More specifically, individuals who have been victimized score high on interpretations of hostility, anger, and retaliation (Camodeca & Goossens, 2005; McCabe, Miller et al., 2010). As such, these individuals may view social partners to have hostile or threatening intentions and subsequently engage in aggressive responses (i.e., Hostile Attribution Bias; Crick & Dodge, 1996). Moreover, associations between victimization and communicative competence have been found (Lindsay et al., 2008). For instance, children who are targets of bullying make less competent social contributions in dyadic conversations (Black & Logan, 1995). In addition, children with a history of negative peer experiences were more likely to endorse less skilled communicative responses, such as telling the

truth following someone's negative performance (Mewhort-Buist et al., 2019). Thus, a history of negative experiences with peers may impact how the communicative intentions of others are interpreted. Moreover, as verbal irony can be used to mock or tease (Pexman et al., 2010) and is involved in social bullying (Sheehan & Jordan, 2002), it may be that individuals with a history of peer victimization have increased experience with ironic language and thus interpret it differently.

In sum, there is reason to believe that a listener's degree of shyness and/or history of negative experiences with peers may impact how the communicative behaviour of others is interpreted. However, it may too be the case that there are important interactions between listener and speaker characteristics. As such, the impact that a listener characteristic plays on the interpretation of communicative intent may depend on the characteristics of the speaker. The present study explores how shyness and negative peer experiences may affect how utterances from high versus low socially dominant speakers are interpreted.

Supporting this idea, research suggests that individuals who are shy or socially anxious interpret social hierarchy information differently than non-shy individuals. That is, they request less information about others before assigning social ranks, and make more revisions in their ratings after being given additional information (Aderka et al., 2013; Haker et al., 2014). This high sensitivity to social rank information leads individuals with social anxiety to overestimate their social partner's dominance, and view those high in social dominance as more dominant than do their non-anxious peers (Aderka et al., 2013; Haker et al., 2014). Individuals with social anxiety (who perceive themselves to be low in social rank; Gilbert, 2001) respond differently to others who are

socially dominant, such as engaging in more submissive and less dominant behaviours, and are more likely to avoid conflict with individuals with high social dominance (Gilboa-Schechtman et al., 2017; Rodebaugh et al., 2016). Thus, shy individuals may be more sensitive to the social dominance of a speaker and interpret statements from speakers who have high versus low social status more differently (versus non-shy individuals).

Although there is little work exploring how individuals with victimization history interpret social dominance information, research shows that social rank is indeed an important contextual cue within negative peer experiences. The literature shows that targets of victimization are often lower in the social hierarchy (de Bruyn et al., 2010; Prinstein & Cillessen, 2003), and are more sensitive to information about their own low social rank (Cillessen & Bellmore, 1999). They are often bullied by others higher in social dominance, and thus may perceive individuals of high social status as more threatening than do those with less victimization experience (Hunter et al., 2007). Therefore, it may be that individuals with adverse peer experiences are more sensitive to social hierarchy information. Thus, in the context of interpreting statements from others, the social dominance of the speaker may too play an important role.

**Present Study**

The present work examined individual's interpretation of ironic and literal comments during a first-person task wherein the individuals were situated within the communicative exchange. Participants engaged in a series of games on a tablet and were told that various other players were watching their performance (i.e., on another tablet). These (virtual) players provided the participants with verbal feedback on their

performance on the task, delivered as either a literal/ironic compliment (i.e., commenting on a fast time) or criticism (commenting on a slow time). Participants then answered questions regarding the speaker's belief as well as their impressions of the speaker (e.g., how mean/nice he/she was, would they spend time with him/her in the future, how popular did you think he/she was, how funny he/she was).

The first research aim was to investigate the interpretation of literal and ironic statements within a first-person task, and whether the social status of the speaker impacted how statements were interpreted. This goal was achieved by situating the participants within the conversational exchange, and providing the participants with information about the social status of the speaker prior to them hearing statements from this (virtual) individual. It was hypothesized that the first-person task will elicit similar comprehension patterns as third-person tasks that are predominantly used in the verbal irony literature. Further, it was hypothesized that statements from players high in social dominance will be interpreted differently than statements from those low in social dominance. However, the direction of such an effect is unknown. That is, as per past work showing a positive bias towards socially dominant individuals, as well as the fact that social aggression is more acceptable when enacted by individuals who are of high dominance, their statements generally could be viewed as more positive (e.g., more nice, more funny, etc.). In contrast, receiving comments from individuals who are of high social status may be more impactful, thereby rendering their statements as being perceived as more negative (more mean, less funny). The second aim was to investigate whether participants' shyness and/or history of negative peer experiences influenced their interpretation of statements generally, as well as interacting with the influence of the

social status of the speaker. Thus, in addition to the first-person task, participants also completed questionnaires measuring shyness, social anxiety, and history of teasing. Participants' shyness and negative peer interactions were predicted to be associated with more negative interpretations of ironic speakers (e.g., more mean, less funny), particularly when the speakers were described as having high social rank.

The final aim was to investigate whether participants' perceptions of their own social dominance influenced their interpretation of speaker utterances and whether this lead to differential interpretations when receiving statements from high versus low social status speakers. Thus, participants were asked to provide ratings of their own social dominance prior to engaging in the interactive task. Little work has been done exploring how high/low perceived social dominance influences one's interpretation of others' social rank. However, previous literature suggests there is more social conflict between interactions of high and low social status individuals, often with more detrimental consequences for those of low social status (Gilbert, 2001; Prinstein & Cisllessen, 2003). As such, participants with low perceived dominance may be more sensitive to the social status of others due to increased riskiness of the interactions. Given the aggressive undertones of verbal irony, it may be that individuals with low perceived dominance interpret ironic comments as more negative than those with high perceived dominance, particularly when they come from a speaker with high social dominance.

## Method

### Participants

Participants ($N = 90$; 32 males, $M = 20.28$ years; $SD = 1.87$) were recruited from the University of Waterloo's online SONA system. The majority of participants (58.75%) reported English as their first language (data was missing from 10 participants). The most frequently reported ethnicity was North American ($n = 38$), and the second most frequently reported ethnicity was Asian ($n = 23$) (missing data $n = 15$).

### Procedure

Participants were tested individually in a research laboratory during one session that lasted approximately 60 minutes. The sequence of task administration was consistent across participants: the verbal irony task, a vocabulary measure, and questionnaires (shyness, social anxiety, and teasing experience).[1] The verbal irony task was completed on a tablet, the vocabulary measure was administered by the researcher, and the remaining questionnaires were answered in a printed booklet.

To evaluate how participants interpreted statements by others, they participated in a task (referred to in this thesis as the verbal irony task) where they completed a series of 'games' (i.e., "I Spy" games) and were then provided with comments from other players who presumably observed their gameplay. The comments from the other players differed by statement type (ironic or literal) as well as by valence (criticism or compliment). Moreover, the characteristics of the other (fictional) players were manipulated to be either high or low social dominance, thus, resulting in a 2(statement type) x 2(valence) x 2(social dominance) design. The order of conditions was fully

[1] Participants were also asked to report on depressive symptoms, but this measure is not discussed further in the thesis.

counterbalanced across participants. There were 16 trials in the task (i.e., two in each condition).

**Personal dominance rating.** Before participants began the task, an examiner helped them create a game profile in which they answered various questions related to their own social dominance (see Figure 1a). The questions were presented in a 10-point Likert scale format. The first question, "How comfortable are you around others?" ranged from 1 (*Never comfortable*) to 10 (*Always comfortable*). The next question, "How confident are you speaking in group settings?" ranged from 1 (*Not at all confident*) to 10 (*Very confident*). And the third question, "How comfortable are you in leadership roles?" had response options that ranged from 1 (*Not comfortable*) to 10 (*Pretty comfortable*). This process provided information about participants' view of their own social dominance and served the purpose of increasing the believability of the task (i.e., as they are subsequently shown profiles they are told were created by other participants, see Figure 1b for an example). These questions were based on a review of the social dominance literature and measures of dominance/submissiveness [e.g., Inventory of Interpersonal Problems (IIP-48; Gude, Moum, Kaldestad, & Friis, 2000); International Personality Item Pool—Interpersonal Circumplex (IPIP-IPC; Markey & Markey, 2009); King, Johnson, & Van Vugt, 2009)]. Responses to the personal dominance questions were analyzed for reliability, and yielded a Cronbach's alpha value of .795.

Each game trial began when participants were shown a virtual player's profile (gender matched to the participant) and were told that this specific player would be able to see their gameplay on that trial (see Figure 1b for an example). The profiles of the

virtual players consisted of answers to the questions the participants had answered about themselves. The profiles were created to present the virtual players as being either high or low social rank—that is, an individual who was high in social dominance had a profile that indicated he/she was more comfortable around others, highly confident speaking in group settings, and comfortable in leadership roles (and reverse for individuals who were low in social dominance).

After finding out who would be observing their game play, participants were informed which items they had to find within the "I Spy" game (see Figure 1c). Each trial was timed, and participants were given feedback on their performance compared to the average time of others who completed each trial (see Figure 1d). However, in reality, the "average time" that participants saw was a ratio of their own time, and not the actual average completion time of others. That is, in order to create contexts where the participants did well (and were complimented by the other player) or did poorly (and thus were criticised by the other player), they were told that they completed the task either faster (i.e., positive context) or slower (i.e., negative context) than the average time.

After participants found out about their performance (relative to other players), the virtual player sent them a message. The messages from the virtual players were presented as pre-recorded audio recordings to ensure standardized procedures. The comments were of either positive valence (i.e., a compliment; commenting on a quicker completion time than average), or negative valence (i.e., a criticism; commenting on a slower completion time than average). Moreover, each message was recorded in either a literal or ironic tone. Literal comments were spoken with an authentic, blunt tone of

voice—literal compliments were spoken with a sincere, friendly tone (e.g., "That was a pretty fast time!"), while the literal criticisms were delivered in a blunt, neutral tone (e.g., "That was a pretty slow time!"). Ironic comments were spoken with a mocking or teasing tone of voice, with some words dragged out for emphasis, in which ironic compliments were spoken in a teasing manner (e.g., "That was a *pretty* slow time!"), and ironic criticisms were delivered in a mocking tone (e.g., "That was a *pretty* fast time!). Recordings were created using eight males and females who provided the statements for each specific "I Spy" game trial in the four different conditions (i.e., literal/ironic criticisms, literal/ironic compliments) so that the specific voice actors would be counterbalanced across conditions.

To increase the authenticity of the "I Spy" game, each participant was given eight opportunities to view the gameplay of other virtual players, see how they (presumably) did relative to the average player, and send them an audio message, as well. Participants were given a choice between a message with a positive valence (e.g., that was a pretty fast time) or negative valence (e.g., that was a pretty slow time). They were also told that they could say the message in a tone of their own choice.

Following each message sent from the virtual players, participants were asked a series of five questions.[2]

**Speaker belief.** The first question, the "speaker belief question," assessed participants' understanding of the speakers' true beliefs with respect to their performance on the task (i.e., if he/she was fast or slow compared to the average; e.g., "Did Sally think you were fast or slow on this trial?"). A response was considered

[2] Participants also answered another question about the speaker's view, but to minimize the number of outcome variables is not discussed in the thesis.

accurate if, for criticisms, participants rated that the speaker thought their time was slow; for compliments, participants were correct if they rated that the speaker thought their time was fast. The proportion of times that each participant correctly identified the speaker's belief for each statement type was used for subsequent analyses. Consistent with previous studies (e.g., Glenwright & Pexman, 2010; Mewhort-Buist & Nilsen, 2019), this question was also used as a control question; that is, responses to subsequent questions were only included in analysis when the participants could accurately appreciate the speaker's beliefs.

**Meanness rating.** The second question assessed the understanding of the social intentions of the speaker (i.e., "How mean or nice was she being?"). Participants responded using a 5-point Likert scale: 1 (*Very mean*), 2 (*A little mean*), 3 (*Not mean/not nice*), 4 (*A little nice*), and 5 (*Very nice*).

**Time rating.** Participants were asked if they would spend time with each speaker in the future (i.e., "Would you spend time with her in the future?). Participants responded using a 5-point Likert scale: 1 (*Definitely not*), 2 (*Probably not*), 3 (*Maybe*), 4 (*Probably, yes*), and 5 (*Yes, definitely*).

**Popularity rating.** Participants were asked how popular did they think the virtual player was (i.e., "How popular did you think she was?"). Participants responded using a 5-point Likert scale: 1 (*Not at all popular*), 2 (*Not really popular*), 3 (*A little bit popular*), 4 (*Pretty much popular*) and 5 (*Very much popular*).

**Humour rating.** The final question asked participants to judge the humour of each virtual player (i.e., "How funny was she being?"). Participants responded using a

5-point Likert scale: 1 (*Not at all funny*), 2 (*A little bit funny*), 3 (*Somewhat funny*), 4 (*Very funny*), and 5 (*Extremely funny*).

After all the trials were completed, participants were asked whether they thought the other players in the game were real or not. This question is also used as a manipulation check to ensure that the participants believe they were receiving messages from real players.

**Language Measure**

To assess participants' language skills, participants were administered the Expressive Vocabulary test from the Wechsler Individual Achievement Test-III (WIAT-III, Wechsler, 2009). In this task, participants are asked to verbally name various pictures after hearing a brief description of each item. Participants received a total score that could range from 0-17 on this measure.

**Questionnaires**

After the verbal irony task, participants were asked to complete a number of questionnaires in a booklet.

**Shyness**. Temperamental or trait shyness is a significant risk factor for social anxiety (Pickard et al., 2017) and research suggests that shyness and social anxiety may exist along a continuum (Brook & Willoughby, 2019; McNeil, 2001). So as to be sensitive to variations in social anxiety across a non-clinical sample, a measure of shyness as well as social anxiety were used.

Shyness was assessed using the Revised Cheek and Buss Shyness Scale (RCBS), a self-report measure containing 20 items developed to assess everyday adult experiences of shyness (Cheek & Melichor, 1985). The 20 items are presented in the

format of 5-point Likert scales ranging from 1 (*Very uncharacteristic or untrue, strongly disagree*) to 5 (*Very characteristic or true, strongly agree*). The RCBS has been shown to be a psychometrically sound measure of shyness given its strong internal reliability, $\alpha = .86$, and two-week test-retest reliability, $r = .88$ (Hopko, Stowell, Jones, Armento, & Cheek, 2005). With the sample in the current study, the RCBS yielded a Cronbach's alpha of .93.

Participants also complete the Social Phobia Inventory (SPIN), a self-report social anxiety questionnaire which contains 17 questions assessing clinical levels of social anxiety (Connor et al., 2000). All questions are presented as 5-point Likert scales, ranging from 1 (*Not at all*) to 5 (*Extremely*). According to the developers, this measure demonstrates acceptable psychometric properties, including construct validity (Connor et al., 2000). With the participants in this study, the SPIN measure yielded a Cronbach's alpha of .77.

Within the current sample, the two measures were found to be highly correlated, $r = .71$, $p < .001$ (disattenuated correlation = .84). As such, the RCBS and SPIN total scores were standardized and then combined to create a composite variable including both shyness and social anxiety, hereafter referred to as the shyness measure. When looking at this measure's reliability, the composite had a Cronbach's alpha of .91.

**Teasing experience.** Participants completed the Teasing Questionnaire-Revised (TQ-R), a self-report measure containing 29 items assessing the types of teasing experiences that an individual may have experienced as a child (Storch et al., 2004). Participants responded using a Likert scale from 0 (*I was never teased about this*) to 4 (*I was always teased about this*). The TQ-R measures teasing in various domains and

has five subscales: performance, academic issues, social behaviour, family background, and appearance. For the purpose of this study, the total score was used in analyses. According to the developers, the TQ-R total score has high internal consistency, $\alpha$ = .89, and test-retest reliability, ICC = .87 (Strawser, Storch, & Roberti, 2005). When looking at the scale's internal reliability, TQ-R scores for the current sample had a Cronbach's alpha of .86.

## Results

### Preliminary Analyses

Outlier analyses were conducted per each variable (±3 *SD*). Only one outlier was found in the data (for the TQ-R), and was subsequently Winsorized for the analyses.

All the data were analyzed for missing values. The TQ-R was found to have three missing values (.115%). Little's Missing Completely At Random test was not significant, indicating that the values were missing completely at random, $\chi^2 = 212.512$, $df = 195$, $p = .185$. The values were imputed using single stochastic regression imputation.

To address the second research question, the shyness composite measure and teasing measure were dichotomized into high and low groups using a median split method. Not surprisingly, individuals in the high shyness group had significantly higher shyness composite scores than the low shyness group, $t(88) = 11.167$, $p < .001$. Similarly, individuals in the high teasing group had significantly higher teasing scores than the low teasing group, $t(88) = 11.069$, $p < .001$ (Table 1).

Additionally, a variable was created to reflect the participants' perception of their own social dominance. This variable is the sum of their responses to the profile questions, which tap into information about social status. Participant's personal dominance scores were also dichotomized into high and low social status groups using a median split method. Individuals in the high personal dominance group had significantly higher scores than the low personal dominance group, $t(88) = 12.214$, $p < .001$ (Table 1).

The continuous variables of the three individual differences (shyness, teasing experience, personal dominance) were correlated to examine potential associations. Analyses revealed that shyness was significantly correlated with teasing experience, $r =$

.264, $df = 90$, $p = .012$ (disattenuated correlation = .298), and personal dominance, $r = -.696$, $df = 90$, $p < .001$ (disattenuated correlation = -.818). There was no significant correlation between teasing experience and personal dominance, $r = -.027$, $df = 90$, $p = .800$. Similar findings emerged when a correlation was conducted with the dichotomized variables.

To ensure that there were no potential differences in the basic verbal skills of the various groups, the WIAT-III scores were analyzed using *t*-tests for each of the shyness, teasing, and perceived social dominance groups. No differences were found, *p*s > .429. The verbal measure was not included in further analyses.

At the end of the tablet task, participants were asked if they believed the other virtual players were real or not real. Repeated measures ANOVAs for each of the five verbal irony items (i.e., belief, mean, time, popularity, funny) were conducted. Whether the participants thought the other players were real ($n = 12$) or not real ($n = 78$) was included as a between group variable for the belief question. There was no significant effect of this question (nor interactions), *p*s > .220, suggesting that whether the participant thought the other players were real or not did not impact their ability to accurately comprehend the statements.

**Interpretations of Statements**

As this task was novel in the sense that participants were situated within the interaction and on the receiving end of comments (versus a third-person task), the first set of analyses sought to explore how participants perceived statements generally. Further, whether the social status of the other player impacted participants' perceptions was examined. To address these aims, participants' responses were examined in series of

2(social dominance: high or low) x 2(statement type: literal or ironic) x 2(statement valence: compliment or criticism) repeated measures ANOVAs. Gender was initially included as a between group variable in all analyses but was removed (and thus, not reported) if there was neither a significant main effect nor interactions. Any interactions were further probed with paired t-tests and independent sample t-tests, with Bonferroni correction (i.e., .05/number of comparisons).

All data were included when analyzing the speaker belief question ($n$ = 90), but in subsequent questions, the values were only included if the belief question was answered correctly ($n$ = 37) (consistent with past work, e.g., Glenwright & Pexman, 2010; Mewhort-Buist & Nilsen, 2019). The rationale for this decision is that interpreting the other variables only makes sense if the participants accurately understood the beliefs of the speaker (see Table 2).

**Speaker belief.** Participants' responses were scored as accurate if, for compliments, participants rated that the virtual player thought the context was positive (i.e., that their time was fast) and for criticisms they correctly recognized that the virtual player thought the context was negative (i.e., that their time was slow). The proportion of times that the participants correctly identified the speaker's belief for each condition was used for analyses.

The omnibus 2x2x2 ANOVA revealed a main effect of statement valence, $F(1, 89) = 15.614$, $\eta_p^2 = .149$, $p < .001$, and statement type, $F(1, 89) = 98.380$, $\eta_p^2 = .525$, $p < .001$. These significant main effects were qualified by a significant interaction of statement type and statement valence, $F(1, 89) = 26.219$, $\eta_p^2 = .228$, $p < .001$ (Figure 2). This interaction was examined through paired t-tests (collapsed across social dominance).

Participants were significantly more accurate in identifying the speaker belief for ironic criticisms versus ironic compliments, $t(89) = 4.916$, $p < .001$, but there was no difference between literal compliments or criticisms, $p = .734$. For both compliments and criticisms, participants were more accurate in understanding literal versus ironic comments, $t(89) = 10.889, 7.026$, $ps < .001$, respectively for compliments and criticisms.

As noted above, for subsequent analyses, only those responses for which participants correctly identified the speaker belief were included. This reduced the number of participants included in the analyses to 37.

**Meanness rating.** Gender was included as a between group factor in the analyses for meanness due to an interaction with the variables of interest.

Results from the ANOVA yielded main effects of statement valence, $F(1, 35) = 78.978$, $\eta_p^2 = .693$, $p < .001$, and statement type, $F(1, 35) = 60.850$, $\eta_p^2 = .635$, $p < .001$. However, this interaction was qualified by a significant interaction between these two variables, $F(1, 36) = 134.652$, $\eta_p^2 = .789$, $p < .001$. Four paired t-tests were conducted with the meanness ratings collapsed across popularity and gender, revealing that literal compliments ($M = 4.392$, $SD = 0.529$) were rated as significantly nicer than literal criticisms ($M = 2.297$, $SD = 0.600$), $t(36) = 14.566$, $p < .001$, but that ironic compliments ($M = 2.642$, $SD = 0.647$) and ironic criticisms ($M = 2.588$, $SD = 0.607$) did not differ, $p = .693$. For criticisms, once applying Bonferroni correction, there was a marginally significant difference in the meanness ratings for ironic versus literal statements, $t(36) = 2.173$, $p = .036$. For compliments, literal statements were viewed as significantly nicer than ironic statements, $t(36) = 12.937$, $p < .001$.

The omnibus ANOVA also yielded a significant interaction between statement type and gender, $F(1, 35) = 4.639$, $\eta_p^2 = .117$, $p = .038$. The interaction was probed using independent samples t-tests conducted between genders with the meanness ratings collapsed across social dominance and statement valence. Males and females did not differ on their ratings for literal statements (men: $M = 3.458$, $SD = 0.334$; women: $M = 3.390$, $SD = 0.364$) or ironic statements (men: $M = 2.427$, $SD = 0.418$; women: $M = 2.705$, $SD = 0.478$) $p$s $> .094$. Paired t-tests were conducted separately for males and females, and demonstrated that both males and females rated literal comments as nicer than ironic comments, $t(11) = 7.497$; $t(24) = 4.540$, respectively for males and females, $p$s $< .001$.

**Time rating.** Gender was included as a between group factor in the analyses due to an interaction with the variables of interest.

When examining participants' interest in spending time with the virtual player, main effects of statement valence, $F(1, 35) = 53.373$, $\eta_p^2 = .604$, $p < .001$, and statement type, $F(1, 35) = 29.814$, $\eta_p^2 = .460$, $p < .001$, emerged. However, these main effects were qualified by a number of interactions.

There was a significant 3-way interaction of social dominance, statement type, and statement valence, $F(1, 36) = 6.249$, $\eta_p^2 = .148$, $p = .017$ (Figure 3). To better understand this interaction, 2(social dominance) x 2(statement type) repeated measures ANOVAs were conducted for each statement valence.

***Compliments.*** There was a significant main effect of statement type, $F(1, 36) = 78.707$, $\eta_p^2 = .686$, $p < .001$, which revealed that participants had more interest in spending time with other players who used literal compliments ($M = 3.946$, $SD = 0.669$)

as opposed to ironic compliments ($M$ = 2.743, $SD$ = 0.698). There were no other significant effects, $p$s > .653.

***Criticisms.*** There was a significant main effect of type, $F(1, 36) = 4.847$, $\eta_p^2 = .119$, $p = .034$, but this was qualified by a significant interaction with social dominance, $F(1, 36) = 5.519$, $\eta_p^2 = 133$, $p = .024$. Paired t-tests revealed that participants wanted to spend more time with players who used ironic criticisms versus literal criticisms if the player was identified as socially dominant, $t(36) = 3.397$, $p = .002$, but not when the player was of low social status, $p = .780$. There was no difference in participants' desire to spend with high versus low status players who used ironic or literal criticisms, $p$s > .053.

The omnibus (i.e., 2x2x2) ANOVA also revealed a significant interaction between statement valence and gender, $F(1, 35) = 8.567$, $\eta_p^2 = .197$, $p = .006$. Paired t-tests revealed that both men and women wanted to spend more time with players who gave compliments (men: $M$ = 3.188, $SD$ = 0.623; women: $M$ = 3.420, $SD$ = 0.501) versus those who voiced criticisms (men: $M$ = 2.792, $SD$ = 0.587; women: $M$ = 2.495, $SD$ = 0.570), men: $t(11) = 3.014$, $p = .012$; women: $t(24) = 8.564$, $p < .001$. Independent t-tests revealed that men and women reported wanting to spend time equally with those who made compliments or criticisms, $p$s > .151.

**Popularity rating.** There was a main effect of social dominance, $F(1, 36) = 43.513$, $\eta_p^2 = .547$, $p < .001$, wherein participants rated players described as high in social dominance ($M$ = 3.233, $SD$ = .459) as more popular than those with low social dominance ($M$ = 2.760, $SD$ = .351).

There were also main effects of statement valence, $F(1, 36) = 6.968$, $\eta_p^2 = .162$, $p = .012$, and statement type, $F(1, 36) = 20.031$, $\eta_p^2 = .358$, $p < .001$, which were qualified by a significant type by valence interaction, $F(1, 36) = 9.941$, $\eta_p^2 = .216$, $p = .003$. Paired t-tests revealed that players who used literal compliments ($M = 3.405$, $SD = 0.528$) were viewed as more popular than those who used literal criticisms ($M = 2.926$, $SD = 0.642$), $t(36) = 3.552$, $p = .001$, but there was no difference in popularity ratings for those individuals who made ironic compliments ($M = 2.831$, $SD = 0.550$) versus criticisms ($M = 2.824$, $SD = 0.467$), $p = .946$. Those who used literal compliments were rated as more popular than those who used ironic compliments, $t(36) = 5.243$, $p < .001$, but there was no difference in popularity ratings between ironic and literal criticisms, $p = .333$.

**Humour rating.** There was a main effect of statement type, $F(1, 36) = 31.003$, $\eta_p^2 = .463$, $p < .001$, qualified by a significant interaction of type and valence, $F(1, 36) = 10.780$, $\eta_p^2 = .230$, $p = .002$. Paired t-tests (collapsed across social dominance) revealed that participants rated ironic comments as funnier than literal comments for both compliments (ironic: $M = 2.128$, $SD = 0.829$; literal: $M = 1.304$, $SD = 0.453$) and criticisms (ironic: $M = 1.777$, $SD = 0.634$; literal: $M = 1.439$, $SD = 0.494$), $t(36) = 5.541$, 3.278, respectively for ironic and literal statements, $p$s $< .001$. Participants also rated ironic compliments as funnier than ironic criticisms, $t(36) = 3.318$, $p = .002$, but there was no difference in funny ratings between literal compliments and literal criticisms, $p = .164$.

In summary, using this first-person task revealed comprehension patterns (i.e., speaker belief question) consistent with past work using third-person tasks when studying verbal irony. Namely, literal comments were easier for individuals to understand than

ironic comments, and ironic criticisms were easier to understand than ironic compliments. Similarly, the speaker attitude showed a pattern consistent with the Tinge Hypothesis, but only for compliments. That is, an ironic compliment was considered less nice than a literal compliment. However, evidence for muting of the meanness was not found for criticisms. Irony (when used either to compliment or criticize) was seen as funnier than literal comments.

Social dominance did not play a role in participants' responses to these areas (i.e., belief, meanness, humour). It did however impact participants' view of the popularity of the speaker and the degree of which they wanted to spend time with the other player. Participants perceived players with high social status as more popular than players with low social status, regardless of the language form that they use. Participants also wanted to spend more time with players with high social dominance if they used ironic criticisms versus literal criticisms; however, this pattern did not appear for players with low social status.

**Role of Shyness and Teasing on Interpretations of Statements**

To address the second research question, namely whether individual differences in shyness and teasing impacted participants' interpretation of statements, mixed model ANOVAs where group category (high/low shyness or teasing) was included as a between group variable, and statement type, valence, and social dominance of speaker were within subject variables. Any interactions were further probed with paired t-tests and independent sample t-tests, with adjusted Bonferroni alpha values. To avoid repeating results above, only those findings that pertain to the group categories (i.e., shyness and/or

teasing) are discussed below. All analyses initially included gender, but this factor was removed (and not reported) if there were no interactions with the group category.

Similar to previous analyses, all data were included when analyzing the speaker belief question, but values were only included in subsequent analyses if the belief question was answered correctly. (See Table 2).

**Shyness.** Shyness group (i.e., high/low) was entered into the ANOVAs as a between group variable to determine whether this temperamental characteristic impacted how statements were interpreted. Only those findings pertaining to shyness are reported below.

***Speaker belief.*** For the speaker belief question, there was no main effect of shyness group nor significant interactions between any of the within subject variables, *p*s > .110.

***Meanness rating.*** Analyses did not reveal a main effect of shyness group or significant interactions with other variables, *p*s > .124.

***Time rating.*** For the time ratings, there was no main effect of shyness group, $p = .489$. However, analyses revealed a significant interaction between shyness group and valence, $F(1, 35) = 5.116$, $\eta_p^2 = 128$, $p = .030$. Paired t-tests (collapsed across statement type and dominance) revealed that participants in the low and high shy groups wanted to spend time with players who made compliments more than those who made criticisms, $t(18) = 4.469$; $t(17) = 7.717$, respectively for low and high shyness groups, $ps < .001$. Independent t-tests (collapsed across statement type and social dominance) revealed no significant difference in time ratings between the high and low shyness groups for compliments (high shyness: $M = 3.389$, $SD = 0.439$; low shyness: $M = 3.303$, $SD =$

0.640) or criticisms (high shyness: $M = 2.431$, $SD = 0.610$; low shyness: $M = 2.743$, $SD = 0.531$) $p$s > .104.

The omnibus ANOVA also revealed a significant interaction between shyness group and statement type, $F(1, 35) = 4.505$, $\eta_p^2 = .114$, $p = .041$. Collapsed across valence and social dominance, paired t-tests revealed that both high and low shyness groups wanted to spend time with players who made literal comments more than ironic comments, high shyness: $t(17) = 5.933$, $p < .001$; low shyness: $t(18) = 2.932$, $p = .009$. Independent t-tests revealed that participants in the high shyness group versus low shyness group did not differ in how much they wanted to spend with literal or ironic speakers, $p$s > .557.

***Popularity rating.*** Results revealed a significant main effect of shyness group, $F(1, 35) = 4.767$, $\eta_p^2 = .120$, $p = .036$, such that, in general, the high shyness group gave higher popularity ratings than the low shyness group. This main effect was qualified by a significant 4-way interaction of social dominance, type, valence, and shyness, $F(1, 35) = 9.201$, $\eta_p^2 = .209$, $p = .005$. To probe this interaction, additional ANOVAs were conducted for each statement valence condition.

*Compliments.* There was no main effect of shyness nor interactions with any of the within group variables, $p$s > .292.

*Criticisms.* There was a significant main effect of shyness group, $F(1, 35) = 7.786$, $\eta_p^2 = .182$, $p = .008$, the high shyness group gave higher popularity ratings than the low shyness group for critical speakers. This main effect was qualified by a significant 3-way interaction of social dominance, statement type, and shyness, $F(1, 35) = 8.967$, $\eta_p^2 = .204$, $p = .005$ (Figure 4).

To better understand the 3-way interaction within criticisms, additional shyness group x social dominance ANOVAs were conducted separately for ironic and literal criticisms. The ANOVA for literal criticisms revealed a main effect of shyness group, $F(1, 35) = 8.129$, $\eta_p^2 = .188$, $p = .007$, indicating that shy individuals rated those who use literal criticisms as more popular than did non-shy individuals. There were no significant interactions between shyness and social dominance, $p = .840$.

In contrast, for ironic criticisms there was no significant main effect of shyness group, $p = .130$, but analyses revealed a significant interaction between shyness and social dominance, $F(1, 35) = 17.970$, $\eta_p^2 = .339$, $p < .001$. Paired t-tests revealed that the low shyness group did not rate speakers with high or low social status (using ironic criticisms) differently in terms of popularity, $p = .734$. However, the high shyness group rated speakers high in social dominance (using ironic criticisms) as more popular than speakers low in social dominance (using ironic criticisms), $t(17) = 5.050, 2.932$, respectively for high and low social status, $p$s $< .001$. Independent t-tests revealed that the high shyness group viewed speakers with high social dominance using ironic criticisms as being more popular than did the low shyness group, $t(35) = 3.785$, $p = .001$, but there was no group difference in how speakers with low social dominance were viewed, $p = .132$.

***Humour rating.*** There was no main effect of shyness group or significant interactions with the other variables, $p$s $> .193$.

Taken together, participant shyness did not impact individuals' ability to appreciate the speaker's belief, nor the ratings for speaker attitude or humour. Although there were initial significant interactions between shyness and the conditions regarding

the participants' desire to spend time with the various speakers, when further probed, group differences did not emerge.

However, participant shyness was found to play a role in judgments on the players' popularity. Shy individuals viewed players who use literal criticisms as more popular than did the non-shy individuals. Further, shy individuals perceived speakers with high social dominance who used ironic criticisms as more popular than did participants in the low-shy group.

**History of teasing.** Similar to the analyses above, teasing group (i.e., high/low) was entered into the ANOVAs to determine whether this characteristic impacted how statements were interpreted. Only those findings that pertain to teasing are reported below.

***Speaker belief.*** There was no main effect of teasing group or significant interactions with other variables on participants' judgments of speaker belief, *p*s > .134.

***Meanness rating.*** There was no main effect of teasing group or significant interactions with other variables on participants' judgments of meanness, *p*s > .073.

***Time rating***. There was no main effect of teasing group or significant interactions with other variables on participants' desire to spend time with the other players, *p*s > .076.

***Popularity rating.*** When asked about the popularity of the other player, there was a significant main effect of teasing group, $F(1, 35) = 4.767$, $\eta_p^2 = .120$, $p = .036$. In general, the high teasing group reported higher popularity ratings than the low teasing group. However, this effect was qualified by two significant interactions.

First, there was a significant 3-way interaction between teasing group, statement type, and valence, $F(1, 35) = 4.314$, $\eta_p^2 = .110$, $p = .045$. To better understand this interaction, separate ANOVAs were conducted for each statement type (collapsed across social dominance).

*Ironic statements*. There was no main effect of teasing group or significant interaction between teasing group and valence for ironic statements, *p*s > .644.

*Literal statements.* There was no main effect of teasing group, $p = .061$, although analyses revealed a significant interaction between teasing group and valence, $F(1, 35) = 7.763$, $\eta_p^2 = 182$, $p = .009$. Paired t-tests conducted for each teasing group revealed that participants with a history of teasing did not rate the popularity of speakers making criticisms ($M = 3.208$, $SD = 0.626$) differently from those making compliments ($M = 3.333$, $SD = 0.420$), $p = .491$. In contrast, participants with fewer teasing experiences rated speakers making compliments ($M = 3.474$, $SD = 0.617$) as more popular than those making criticisms ($M = 2.658$, $SD = 0.548$), $t(18) = 4.717$, $p < .001$. Further, independent t-tests revealed that those participants who endorsed a high amount of teasing rated speakers who used literal criticisms as being more popular than did the participants who endorsed fewer teasing experiences, $t(35) = 2.851$, $p = .007$, but there was no difference in ratings between teasing groups for speakers who made compliments, $p = .427$.

Second, the omnibus ANOVA revealed a significant 3-way interaction between teasing group, social dominance, and valence, $F(1, 35) = 4.883$, $\eta_p^2 = .122$, $p = .034$ (Figure 5). To better understand the interaction, additional ANOVAs were conducted for each statement valence, collapsed across statement type.

*Compliments.* For the compliment conditions, there was no main effect of teasing group or interaction with social dominance on popularity ratings, *p*s > .458.

*Criticisms.* There was a significant main effect of teasing group, $F(1, 35) = 9.962$, $\eta_p^2 = .222$, $p = .003$. In general, the high teasing group gave higher popularity ratings than the low teasing group for players who used criticisms. The effect was qualified by a significant interaction between social dominance and teasing group, $F(1, 35) = 11.251$, $\eta_p^2 = .243$, $p = .002$, for the popularity ratings of critical speakers. Paired t-tests conducted separately for the high versus low teasing groups revealed that individuals with fewer teasing experiences did not rate the popularity of speakers high in social dominance differently from speakers low in social dominance, $p = .204$. In contrast, participants in the high teasing group rated speakers high in social rank making criticisms as more popular than speakers low in social rank making criticisms, $t(17) = 5.841$, $p < .001$. Independent t-tests revealed that participants in the high teasing group did not view the popularity of players with low social dominance who made criticisms differently from the low teasing group, $p = .444$. However, the high teasing group viewed the critical players with high social dominance as more popular than did the low teasing group, $t(35) = 4.114$, $p < .001$.

***Humour rating***. There was a significant main effect of teasing history, $F(1, 33) = 5.851$, $\eta_p^2 = .151$, $p = .021$, such that generally, the high teasing group gave higher funny ratings than the low teasing group. There was also a main effect of gender, $F(1, 33) = 5.060$, $\eta_p^2 = .133$, $p = .031$, such that males gave higher funny ratings than females. Gender was included in the ANOVA due to a significant interaction with teasing history, $F(1, 33) = 5.490$, $\eta_p^2 = .143$, $p = .025$. The omnibus ANOVA revealed a significant 3-

way interaction between gender, teasing group, and statement type, $F(1, 33) = 6.813$, $\eta_p^2 = .171$, $p = .014$. This interaction was further probed with teasing group x statement type ANOVAs on the humour ratings (collapsed across valence and social dominance) conducted separately for men and women.

*Women*. There was no main effect of teasing history or interaction with statement type, $p$s > .377.

*Men*. For males, there was a significant main effect of teasing history, $F(1, 10) = 9.280$, $\eta_p^2 = .481$, $p = .012$, such that males with more teasing experience generally rated statements as funnier than males with less teasing experience. The main effect was qualified by an interaction of statement type and teasing, $F(1,10) = 5.465$, $\eta_p^2 = .353$, $p = .042$. Paired t-tests revealed that men who reported less teasing in their past did not rate literal statements ($M = 1.458$, $SD = 0.504$) differently from ironic statements ($M = 1.778$, $SD = 0.518$), $p = .208$. However, males who endorsed more teasing experiences found ironic speakers ($M = 3.000$, $SD = 0.451$) marginally funnier than literal speakers ($M = 1.667$, $SD = 0.072$), $t(2) = 5.747$, $p = .029$. Independent t-tests revealed that the teasing groups did not differ in how funny they viewed the literal comments, $p = .505$, but that the high teasing group found the ironic statements funnier than did the low teasing group, $t(10) = 3.627$, $p = .005$.

The omnibus ANOVA also revealed a significant interaction between gender, teasing, and social dominance, $F(1, 33) = 6.110$, $\eta_p^2 = .156$, $p = .019$. To further understand this interaction, an additional teasing x social dominance ANOVA was conducted for each gender, collapsed across statement type and valence.

*Women.* There was no main effect of teasing or interaction with social dominance for women, *p*s > .178.

*Men*. There was a significant main effect of teasing group, $F(1, 10) = 9.280$, $\eta_p^2 = .481$, $p = .012$, such that in general, males with more teasing experience gave higher funny ratings than males with less teasing experience. The effect was qualified by a significant social dominance and teasing interaction for men's ratings of humour, $F(1, 10) = 5.174$, $\eta_p^2 = .341$, $p = .046$. Paired t-tests conducted separately for the high/low teasing groups revealed that men who reported more frequent teasing experiences found players with high social dominance ($M = 2.500$, $SD = 0.250$) funnier than players with low social dominance ($M = 2.167$, $SD = 0.260$), $t(2) = 8.000$, $p = .015$, but that the men who reported fewer teasing experiences did not rate players with high/low social status any differently (low social status: $M = 1.625$, $SD = 0.390$; high social status: $M = 1.611$, $SD = 0.397$), $p > .873$. However, it is important that the results are difficult to interpret given the small sample size within these groups (high teasing: $n = 3$, low teasing: $n = 9$). Moreover, independent t-tests revealed that across statement type/valence, men who reported a history of teasing perceived the players with high social status as funnier than did the men who reported less teasing experiences, $t(10) = 3.578$, $p = .005$, but this difference did not emerge when rating players with low social status, $p = .052$**.**

Taken together, teasing experience does not seem to impact individuals' ability to accurately report on the speakers' belief, nor on their ratings of the speakers' meanness, or their desire to interact with the speakers. However, it did influence participants' perceptions of popularity and humour.

With respect to perceptions of popularity, participants with more teasing experience perceived literal critical speakers as more popular than did the participants with less teasing experience. Further, participants with more teasing experience rated players high in social dominance using literal criticisms to be more popular than did the participants with fewer teasing experiences. These patterns were not seen for ironic statements.

History of teasing also influenced participants' humour ratings, but only for men. Men who reported more teasing experiences perceived ironic comments as funnier than literal comments, however this pattern was not seen for men with fewer teasing experiences. Moreover, the high teasing group viewed the ironic comments as funnier than the low teasing group. Further, men with more teasing experience viewed players high in social dominance as funnier than players low in social dominance, and gave higher ratings than did the less teasing group.

**Role of Perceived Social Dominance on Interpretations of Statements**

To address the third research question, namely how participants' own perceived social dominance impacted their interpretation of statements, ANOVAs where social dominance groups (high/low; hereby after referred to as "personal dominance," not to be confused with speaker's social dominance) was included as a between group variable, and statement type, valence, and social dominance of the speaker were included as within subject variables. Any interactions were further probed with paired t-tests and independent sample t-tests, with adjusted Bonferroni alpha values. Only findings involving perceived personal dominance are discussed below. All analyses initially

included gender, but this factor was removed (and not reported) if there were no interactions with the group category (and other variables).

All data were included when analyzing the speaker belief question, but values were only included in subsequent analyses if the belief question was answered correctly (see Table 2).

**Belief.** There was no significant main effect of personal dominance on the belief ratings, $p = .942$, however, there was a significant interaction of statement type, statement valence, and personal dominance, $F(1, 88) = 4.157$, $\eta_p^2 = .045$, $p = .044$. To better understand this interaction, further ANOVAs were conducted for each statement valence condition, collapsed across social dominance of the virtual player.

***Compliments.*** For compliments, there was no significant main effect of personal dominance and there was no interaction with statement type, $p$s > .660.

***Criticisms.*** For criticisms, there was no significant main effect of personal dominance, $p = .732$, but analyses revealed a marginal interaction of statement type and personal dominance, $F(1, 88) = 3.698$, $\eta_p^2 = .040$, $p = .058$, that was not explored further.

**Meanness ratings.** Analyses did not reveal a main effect of personal dominance or significant interactions with other variables, $p$s > .090.

**Time ratings.** Analyses did not reveal a significant main effect of personal dominance, $p = .186$, however, there was a significant interaction between personal dominance, statement type, and valence, $F(1, 35) = 7.171$, $\eta_p^2 = .170$, $p = .011$, on participants' interest in spending further time with players. Separate ANOVAs were conducted for each statement valence (collapsed across social dominance of the virtual players).

***Criticisms.*** There was no significant main effect of personal dominance or interaction with statement type for time ratings in criticism conditions, *p*s > .077.

***Compliments.*** Analyses did not reveal a significant main effect of personal dominance, $p = .625$. However, there was a significant 2-way interaction between statement type and personal dominance, $F(1, 35) = 4.549$, $\eta_p^2 = .115$, $p = .040$. Paired t-tests for high and low personal dominance groups revealed that both groups would rather spend time with players who gave literal compliments ($M = 3.855$, $SD = 0.694$; $M = 4.042$, $SD = 0.649$, respectively for high and low personal dominance) than ironic compliments ($M = 2.921$, $SD = 0.736$; $M = 2.556$, $SD = 0.622$, respectively for high and low personal dominance), $t(18) = 4.706$; $t(17) = 9.087$, respectively for high and low personal dominance, *p*s < .001. An independent samples t-test revealed that individuals with high personal dominance did not differ from those who had low personal dominance on their ratings for literal or ironic compliments, $p > .113$.

**Popularity ratings.** The ANOVA did not reveal a significant main effect of personal dominance, $p = .395$. There was a significant main effect of gender, $F(1, 33) = 8.222$, $\eta_p^2 = .199$, $p = .007$, revealing that, in general, females give higher popularity ratings than males. This main effect was qualified by a significant interaction between personal dominance and gender on popularity ratings, $F(1, 33) = 4.564$, $\eta_p^2 = .122$, $p = .040$. Further analyses revealed a significant 4-way interaction involving personal dominance, type, valence, and social dominance (of the virtual player), $F(1, 35) = 10.127$, $\eta_p^2 = .224$, $p = .003$. Additional ANOVAs were conducted for each statement valence.

***Compliments.*** Analyses did not reveal a significant main effect of personal dominance, $p = .847$. Also, there was no significant interaction between perceived

personal dominance, and statement type or social dominance (for the virtual player) for popularity ratings in compliment conditions, *p*s > .181.

***Criticisms.*** There was no significant main effect of personal dominance, $p = .385$. However, the ANOVA revealed a significant interaction of personal dominance, statement type, social dominance (of the virtual player), $F(1, 35) = 7.811$, $\eta_p^2 = .182$, $p = .008$ (Figure 6). Additional ANOVAs were conducted with the popularity ratings for each statement type.

*Literal criticisms.* There was no significant main effect of personal dominance group and there was no interaction with social dominance (of the virtual player) for popularity ratings in literal criticisms, *p*s > .424.

*Ironic criticisms.* There was no significant main effect of personal dominance group, $p = .528$. However, analyses revealed a significant interaction between personal dominance and social dominance (of the virtual player), $F(1, 35) = 8.067$, $\eta_p^2 = .187$, $p = .007$. This interaction was examined through paired t-tests to compare differences between high and low personal dominance groups when judging the popularity of characters described as either high or low in social dominance. Participants high and low in personal dominance did not differ in their ratings of virtual players described as low in social dominance, $p = .132$. However, when rating players high in social dominance, the high personal dominance group gave lower popularity ratings than did the low personal dominance group, $t(35) = 2.190$, $p < .050$.

**Humour ratings.** There was a significant main effect of personal dominance, $F(1, 35) = 5.035$, $\eta_p^2 = .126$, $p = .031$, such that, generally, those of high perceived dominance give higher funny rating than those with low perceived dominance. The effect

was qualified by a significant interaction of personal dominance, type, valence, and social dominance (of the virtual player), $F(1, 35) = 4.987$, $\eta_p^2 = .125$, $p = .032$. To better understand the interaction, ANOVAs were conducted for each statement valence.

***Criticisms.*** There was a significant main effect of personal dominance, $F(1, 35) = 6.047$, $\eta_p^2 = .147$, $p = .019$, such that the high personal dominance group ($M = 1.783$, $SD = .437$) generally gave higher funny ratings than the low personal dominance group ($M = 1.424$, $SD = .452$). There was no interaction with personal dominance and statement type of social dominance (of the virtual player) for humour ratings in the criticism conditions, $p$s > .080.

***Compliments.*** There was no significant main effect of personal dominance group, $p = .125$. However, analyses revealed a significant interaction of perceived personal dominance and statement type, $F(1, 35) = 4.529$, $\eta_p^2 = .115$, $p = .040$. Independent samples t-tests (collapsed on social dominance of the virtual player) revealed that the high personal dominance group ($M = 1.276$, $SD = 0.362$) did not differ from the low personal dominance group ($M = 1.333$, $SD = 0.542$) when judging the humour of literal compliments, $p = .708$. However, the high personal dominance group ($M = 2.395$, $SD = 0.788$) rated ironic compliments as marginally funnier than the low personal dominance group ($M = 1.847$, $SD = 0.777$), $t(35) = 2.217$, $p = .041$. Paired t-tests within each dominance group revealed that, for participants with low personal dominance, there was a marginally significant difference in funny ratings between ironic and literal compliments, $t(17) = 2.279$, $p = .036$. However, the high personal dominance group perceived ironic compliments as funnier than literal compliments, $t(18) = 6.369$, $p < .001$.

In summary, participants' own rating of dominance did not impact their accuracy on the speaker belief questions, or their meanness and time ratings. However, perceived social dominance impacted participants' popularity ratings: participants with low perceived social status viewed players high in social dominance who use ironic criticisms as more popular than did the participants with high perceived social status. Additionally, individuals who rated themselves as high in dominance viewed compliments delivered in an ironic fashion as funnier than those spoken literally and as funnier than did their low dominance peers.

## Discussion

This study examined how literal and ironic language was perceived in a first-person task and whether the social dominance of the speaker impacted individuals' interpretations. Further, this study examined the role that individual characteristics of the recipients (i.e., the participants), namely shyness, teasing experience, and perceived personal dominance, played in the interpretation of comments from others. It was hypothesized that individuals high in shyness and with teasing experience would have more negative interpretations of ironic speakers than individuals low in these characteristics, and this effect would be further exacerbated if the speaker was described as high in social status. To examine these hypotheses, participants engaged in a verbal irony task in which they received criticisms and compliments from virtual players (described as either high or low in social status), which were spoken in either a literal or ironic fashion. Several key findings about the relationship between the contextual factors, listener characteristics, and interpretations of communicative intention emerged. However, it is important to note that given the limitation of the participants' overall lack of believability within the study's deception (i.e., believing there were virtual players), and the small sample size after controlling for verbal irony belief, the following findings should be considered with caution.

With respect to the first goal, results from the first-person task revealed comprehension patterns (i.e., speaker belief accuracy) that are consistent with past work using third-person perspective tasks when studying verbal irony (e.g., Mewhort-Buist & Nilsen, 2017), providing support for the first research hypothesis. Participants were better able to comprehend literal versus ironic comments, and ironic criticisms were easier to

understand than ironic compliments. It is likely that this pattern emerged because ironic compliments are a less frequently used language form (Garmendia, 2010) and, thus, participants were more likely to misunderstand the speaker's intent. Participants' interpretation of the speakers' attitude (i.e., meanness ratings) provided partial support for the Tinge Hypothesis, which posits that irony mutes the impact of the message (Dews & Winner, 1995). Participants considered ironic compliments to be less nice than literal compliments. However, evidence for this muting effect did not emerge for criticisms. In the present study, the lack of a muting effect for ironic criticisms may be due to the first-person nature of the task, such that participants were situated within the interaction and thus the criticisms (directed at them) may have been perceived as more harsh, even when spoken ironically. That is, Katz and Bowes (2011) suggest that with criticisms, the negative statement valence may be more salient than the difference between ironic and literal language; as such, muting might be found only with mildly sarcastic criticisms.

When looking at humour ratings, results showed that participants perceived ironic comments as funnier than literal comments. This is consistent with the literature describing humour as a social function of verbal irony (Dews et al., 1995; Pexman & Olineck, 2002). Together the findings suggest that immersing the participants within the interaction neither facilitates nor hinders the ability to detect ironic language (i.e., comprehension). Further, the pattern of results with respect to how the speaker is perceived does not change markedly from those studies using third-person tasks (though potentially there is less muting for ironic criticisms).

This research had asked how the social dominance of the speaker impacted the interpretation of statements. Participants perceived players high in social dominance as

more popular than those low in social dominance, regardless of the language form they used. This main effect serves somewhat as a manipulation check, confirming that the social dominance descriptions accurately depicted the players differently in terms of a social dimension. The social dominance of the speaker did not impact how the speaker's attitude or humour was perceived. However, it did impact participants' desire to spend time with the speakers, as well as their perceptions of the speakers' popularity. With respect to time, participants indicated that they wanted to spend more time with players with high social dominance who used ironic criticisms, when compared to those who used literal criticisms, but there was no effect for players with low social status. Thus, it may also be the case that ironic criticisms are seen as more acceptable from speakers with high social status (at least when compared to the acceptability of literal comments), but that this same acceptance is not found for speakers with low social dominance. Supporting this notion, participants indicated that they wanted to spend more time with players high in social rank who made ironic criticisms versus players who were of low dominance and made ironic criticisms (albeit marginally significant). These results may provide support that individuals with high social dominance are perceived in a more positive light, such that their social peers view them as more socially desirable. However, as discussed further below, it is unclear if "popularity" was interpreted by the participants as a positive or negative trait.

The second aim of the present research was to investigate whether participants' individual differences influenced their interpretations of statements, as well as any interactions with the speaker's social status. The following will discuss each of the

individual differences (i.e., shyness, teasing experience, personal dominance) in succession, along with any interactions with the social rank of the speaker.

Regarding the association between shyness and the comprehension of ironic statements, consistent with previous work (Mewhort-Buist & Nilsen, 2017), shyness did not impact the ratings for speaker belief. However, contrary to this previous work and the proposed hypothesis, shyness was not associated with perceptions of ironic speakers' attitude. That is, shyer participants did not rate ironic speakers to be meaner than non-shy participants. Further, shyness also did not play a role on humour ratings, or the desire to spend time with the speakers. It may be that, given the nature of the task in the present study, there was less ambiguity in the ironic comments. That is, the participants were given explicit direct feedback on their performance (i.e., described as faster or slower than the average), which may have reduced the variance in their irony interpretations and underestimated the role of the participants' temperaments in their responses. In addition, previous work by Mewhort-Buist and Nilsen (2017) specifically recruited participants who scored high on shyness during a mass testing session, thus the sample used in that study had an overrepresentation of shy individuals. It may be that the sample used in the current study lacked sufficient variability in the shyness scores to allow temperament to play a significant role in the interpretation of statements.

Although shyness did not affect how comments were interpreted generally, this characteristic was associated with how speakers were viewed socially, namely the popularity ratings. Shy individuals tended to interpret those who use criticisms as more popular than non-shy individuals. More specifically, shy individuals viewed speakers who used literal criticisms as more popular than did non-shy individuals, and shy

individuals viewed players high in social dominance who used ironic criticisms as more popular than did non-shy individuals. Overall, it appears that shyness impacts how an individual perceives others' popularity (i.e., social status) according to the valence of the language. Past literature suggests that speakers who deliver insults are perceived as having higher status than the listener, regardless of statement type (i.e., literal or ironic; Dews et al., 1995). It seems that statement *valence*, and not statement *type*, plays an important role in a identifying a speaker's social status, and negative comments are more indicative of higher social status than positive comments. It may be that criticisms are used as a signal of high social status, and to shy individuals, the use of negative comments is considered to be important information when determining others' popularity. Given what is known about shy individuals' sensitivity to social rank information (Aderka et al., 2013), it is likely that shy individuals consider the type of language one uses as an indication of social status when forming impressions of others. Alternatively, it may be that elevated sensitivity to social rank information, including within language cues, contributes to increased social reticence over time.

Similar to shyness, a history of teasing did not influence participants' understanding of speaker belief. There is no past literature looking into how individuals with negative peer experiences comprehend verbal irony. However, as verbal irony is used as a form of social bullying (Sheehan & Jordan, 2002), and more specifically, to mock or tease others (Gibbs, 2000), individuals who report higher levels of teasing may have had ample exposure to this language form to support successful comprehension. Contrary to prediction, teasing experience did not impact participants' ratings of speaker meanness or desire to interact with other speakers. It was anticipated that individuals with

increased negative peer interactions would view ironic language as more hostile as per findings that ambiguous social situations are viewed as more threatening (i.e., Hostile Attribution Bias; Crick & Dodge, 1996). It may be the case that teasing experience did not play a role because the 'interaction' took place in an emotionally neutral context. That is, it may be the case that hostile attributions associated with individuals who have a history of negative interactions are activated in more emotionally charged situations. The nature of the verbal irony task used in the study may have underestimated the impact of victimization on the interpretation of statements; this includes the lack of ambiguity within the context itself (i.e., it was clear when it was a positive/negative context) and the lack of social tension within the social interactions.

However, similar to the results with shyness, a history of teasing plays a role in how speakers' social status is viewed, namely judgement of their popularity. Those individuals who reported more teasing experience viewed speakers who used literal criticisms as more popular, particularly when the speaker was described as socially dominant. It seems that individuals with increased teasing experience are more sensitive to the role that criticisms play in dictating social status (Dews et al., 1995).

Participants' history of teasing also influenced their ratings of how funny statements were, but only for men. However, it is important to note the reduction in sample size after controlling for speaker belief, and further splitting into high and low teasing groups, and gender. Men who reported more teasing experience perceived ironic comments as funnier than literal comments, and funnier than did the low teasing group. The impact of gender found here is consistent with past work showing that males enjoy sarcasm more (Druker, Fein, Bergerbest, & Giora, 2014), and tend to make more

sarcastic remarks (Colston & Lee, 2004). Although past literature suggests that verbal irony is used as a tool to be humorous (Pexman & Olineck, 2002), it is unclear why men with more teasing in their past perceive ironic language as more humorous than those with less teasing experience. Though speculative (and somewhat counterintuitive), it may be the case that increased teasing experiences provided these men with more experience with irony, which resulted in greater appreciation for the humour function of this language form.

While not specific to a particular language form, men with more teasing experience viewed individuals high in social dominance as funnier than individuals low in social dominance, and gave higher humour ratings than did the participants with less teasing experience. Past work shows that humour and telling jokes are often used as a signal for social dominance (Fry, 2011). The literature also suggests that comments delivered by an individual with high social status are more likely to be perceived as a joke than those delivered by individuals with low social status (Simmons & Parks-Yancy, 2012). In addition, it is more acceptable for individuals with high social status to engage in aggressive behaviour (Adams et al., 2010), which is implicated in some aspects of humour (Fry, 2011). The results from the current research support the hypothesis that those of high social dominance are perceived as more positive, and in this case, funnier. Here we find that men who have more teasing experience are especially sensitive to the relationship between social dominance and humour.

The final aim of the study was the impact that participant's perceptions of their own social dominance on their interpretation of comments made by players. Contrary to the hypothesis, personal dominance did not impact participant's comprehension of the

statements, nor their interpretation of speaker attitude. However, it did impact participants' ratings of player's popularity, depending on the social dominance of the player.

More specifically, participants with low perceived social status viewed players high in social dominance who use ironic criticisms as more popular than did the participants with high perceived social status. It may be the case that ironic criticisms, as noted above for criticisms in general, are viewed as the type of language used by individuals with high social rank. However, the sensitivity to this potential difference is noticed primarily in individuals who consider themselves to be of low rank. That is, past work shows that individuals who are low in social dominance are particularly sensitive to cues to social status (i.e., popularity), possibly because when there are social conflicts between individuals high and low in social status, there are often more detrimental consequences for those with low social rank (Gilbert, 2001; Prinstein & Cisllessen, 2003). Thus, these individuals may be searching their social environment for clues to social rank in a way that individuals with high social dominance do not.

Additionally, individuals who rated themselves as high in dominance generally perceived critical comments as funnier than did peers who perceived themselves as low in dominance. Dews and colleagues (1995) suggest that those who use criticisms are considered to be higher in social rank than the listener and aggressive behaviour is viewed as more appropriate when from individuals of high social dominance (Adams et al., 2010). While it is not known whether individuals high in social rank are actually more critical, the findings here suggest that if this is the case, it may be due to them finding critical language more humorous.

Further, individuals who rated themselves as high in dominance viewed compliments delivered in an ironic fashion as funnier than those spoken literally and as funnier than did their peers who perceived themselves as low in dominance. Recall that irony is thought to mute the impact of statements, rendering ironic compliments less complimentary than literal compliments. Moreover, verbal irony is a socially risky language form given the involvement of both humour and aggression within the comments (Shapiro et al., 1991), with ironic compliments as particularly risky given that the literal meaning of the words is negative. Thus, similar to above with criticisms, it appears that individuals with high social status tend to focus on the humour within such risky language.

In summary, the results together suggest that individual differences in terms of shyness, teasing experience, and perceived personal dominance do not play a role in how a speakers' belief is understood, nor their attitude. Where there seems to be the most impact is when interpreting the social status of the speaker, namely how popular he/she is. The general trend is for those individuals who are shy, have a history of teasing, or low perceived dominance to view speakers who use critical language as being more popular. There are also some patterns with humour ratings, in which individuals with more verbal irony experience (i.e., history of teasing, high personal dominance) better appreciate the humour function of ironic language. However, these findings are tentative and future work may further explore the association between individual differences and the interpretation of various types of language.

**Limitations and Future Directions**

Although this research sheds some insight into the factors that influence the interpretation of verbal irony, it is not without its limitations. One such limitation was the artificial nature of the social interaction between participants and the (virtual) players. Although measures were taken to encourage the authenticity of the task, when asked, 87% of the participants suspected that the other players were not real. Further analyses showed that there was no significant effect or interactions with belief accuracy, suggesting that whether the virtual players were real or not did not impact participant's ability to accurately understand the statements. However, it may be that the artificial social interaction between the participant and the virtual players means that the contextual and individual differences were underestimated. Further, it may be the case that social dominance information is meaningful in a more personal context (i.e., with people who know each other) as opposed to this setting involving virtual players. Future work should utilize more naturalistic paradigms to explore the interpretation and production of verbal irony (and associations with individual differences) in real-world settings.

An additional factor that may have contributed to the lack of believability of the task was the potential mismatch between a participant's perception of their performance and their feedback. The feedback given to the participants (i.e., that their performance was either faster or slower than the average) was fixed according to the condition within the counterbalancing order assigned to each participant, and not their actual performance. Consequently, participants may have perceived themselves to have performed well (i.e., completed the trial quickly), but received negative feedback (i.e., that their time was slower than the average time). Similarly, the participants may have perceived themselves

to have performed poorly (i.e., completed the trial slowly), but received positive feedback (i.e., that their time was faster than the average time). Given this, the contrast between how a participant perceived their performance and their feedback might have impacted the authenticity of the verbal irony task. Further, the "average time" that was shown to the participants was a constant ratio of their actual time; that is, in the criticism and compliment trials, participants were told that the average time was 30% faster or slower than their actual performance, respectively. Participants may have noticed the constant ratio between their performance and the average performance, which would have influenced the believability of the task. Future work could vary the ratio so it is more believable, as well as measure participants' responses times in order to assess for overt mismatches between performance and feedback.

The verbal irony task consisted of 16 trials in total, with two trials in each condition. The number of trials was reduced to ensure that the task was feasible in terms of timing for each participant. Although more trials per condition would have increased the power of the current study, it would have also increased the time for each participant to complete the task and further decreased the believability that other virtual players were also simultaneously engaging in the same task. It should also be noted that the number of participants included in the analyses became very small when controlling for belief accuracy (i.e., dropping the sample from 90 to 37 participants during data analysis and even lower when breaking participants into high/low groups). Controlling for speaker belief was essential because it would not make sense to interpret speaker attitudes (for example) if it was clear the participant did not accurately comprehend what the speaker thought. However, it may well be the case that different results would emerge with larger

sample sizes. Further work would benefit from a larger sample size and potentially explicitly telling people about the speaker's belief and intentions (e.g., "Sam thinks your gameplay was slow and sarcastically says to you, "*great* job") so that all data can be included when examining the more nuanced features of how ironic language is interpreted, such as attitude and humour.

The current study conducted analyses with participants' shyness, teasing experience, and personal dominance as dichotomous variables, using a median split method on continuous data to create high and low groups. Splitting at the median is typically not recommended due to its effect on the reduction of power (Aiken & West, 1991); however, given the complexity of the model, grouping the participants within the repeated measures ANOVAs were used for simplicity and practicality purposes. As such, the current study may be underestimating the effects within the data, and further work should maintain power by treating the variables as continuous and input the measures into multiple regression analyses. Further, given the shared variance between shyness and personal dominance ($r = -.696$, $df = 90$, $p < .001$ (disattenuated correlation = -.818)), it may be the case that these variables should be treated as a single construct, which would simplify the analyses.

Many of the significant results were found in the participants' popularity rating. While this may be indicative of participants' seeing the speaker's comments as more relevant to their social status than about the words or intentions behind the words themselves, it is difficult to say as we do not know exactly how participants interpreted the word "popular." The word "popularity" may be perceived as either a positive or negative quality. For example, literature shows that there may be two constructs within

popularity among youth: those who are liked by their peers and display prosocial behaviours, and those who are not necessarily well-liked given that they display a mix of prosocial and manipulative behaviours (Cillessen & Rose, 2005). As such, participants may have differing perceptions when asked about how popular the virtual players were, and future work may benefit from distinguishing between the two constructs.

In addition, the gender findings should be interpreted somewhat with caution given that the virtual players were also gender matched to the participant gender (i.e., females interacted with female social partners, and males interacted with male social partners). The reason for gender matching was to control for confounds such as gender (mis)match. However, this decision meant that any gender effects that emerged could be due to participant gender or gender of the social partner. Further follow-up work could explore ironic interpretation between female-female, male-male, and female-male dyads.

**Conclusion**

The present study utilized a novel paradigm to explore the interpretation of literal and ironic language. Generally, this first-person task resulted in similar patterns when compared to the third-person perspective tasks that are often used in the verbal irony literature. For the most part, speaker dominance did not affect how participants interpreted literal or ironic statements. In addition, the individual characteristics of the listeners (shyness, history of teasing, and perceived dominance) did not affect how the speaker beliefs/attitude were interpreted. However, the individual characteristics of the participant were associated with differences in how the social statuses of the speakers (particularly those using critical language) were interpreted. Findings contribute to a

growing research as to how listener characteristics potentially influence how speakers are perceived.

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## Appendix

Table 1

*Descriptive statistics for the measures*

| Measure | *n* | *M* | *SD* | Range |
|---|---|---|---|---|
| RCBS | 90 | 40.067 | 12.243 | 3.000 – 100.000 |
| SPIN | 90 | 54.256 | 14.347 | 24.000 – 88.000 |
| Shyness composite | 90 | 0.000 | 1.848 | -4.710 – 4.960 |
| High shy group | 45 | 1.407 | 1.136 | 0.110 – 4.960 |
| Low shy group | 45 | -1.407 | 1.253 | -4.710 – 0.110 |
| TQ-R | 90 | 21.522 | 13.813 | 0.000 – 69.000 |
| High teasing | 43 | 31.447 | 11.883 | 18.000 – 69.000 |
| Low teasing | 47 | 10.674 | 4.352 | 0.000 – 17.000 |
| Social Dominance | 90 | 19.677 | 5.469 | 5.000 – 30.000 |
| High Dominance | 40 | 24.400 | 2.023 | 22.000 – 30.000 |
| Low Dominance | 50 | 15.720 | 4.111 | 5.000 – 21.000 |

*Note*. Data were Winsorized before analyses.

Table 1

*Average responses for the Verbal Irony ("I Spy") Task (SD in parentheses)*

| Variable | High social dominance | | | | Low social dominance | | | |
|---|---|---|---|---|---|---|---|---|
| | Ironic | | Literal | | Ironic | | Literal | |
| | Compliment | Criticism | Compliment | Criticism | Compliment | Criticism | Compliment | Criticism |
| Speaker belief | 0.467 | 0.661 | 0.917 | 0.950 | 0.467 | 0.617 | 0.939 | 0.894 |
| | (0.436) | (0.381) | (0.202) | (0.168) | (0.448) | (0.418) | (0.181) | (0.275) |
| Meanness rating | 2.622 | 2.581 | 4.278 | 2.176 | 2.662 | 2.595 | 4.405 | 2.419 |
| | (0.740) | (0.741) | (0.617) | (0.615) | (0.708) | (0.675) | (0.654) | (0.682) |
| Time rating | 2.716 | 2.811 | 3.946 | 2.378 | 2.770 | 2.608 | 3.946 | 2.568 |
| | (0.795) | (0.701) | (0.705) | (0.811) | (0.713) | (0.647) | (0.762) | (0.774) |
| Popularity rating | 3.027 | 3.054 | 3.676 | 3.176 | 2.635 | 2.595 | 3.135 | 2.676 |
| | (0.676) | (0.715) | (0.658) | (0.827) | (0.663) | (0.587) | (0.642) | (0.679) |
| Humour rating | 2.135 | 1.824 | 1.324 | 1.473 | 2.122 | 1.730 | 1.284 | 1.405 |
| | (0.976) | (0.699) | (0.503) | (0.589) | (0.776) | (0.778) | (0.521) | (0.622) |

*Note*. The number of participants for speaker belief accuracy questions is $n = 90$; the remaining variables control for correct speaker belief accuracy and the analyses are based on a sample size of $n = 37$.

*Figure 1*. Example screens from verbal irony task: a) participants' personal dominance profile; b) example of virtual player's social dominance profile (low dominance shown);



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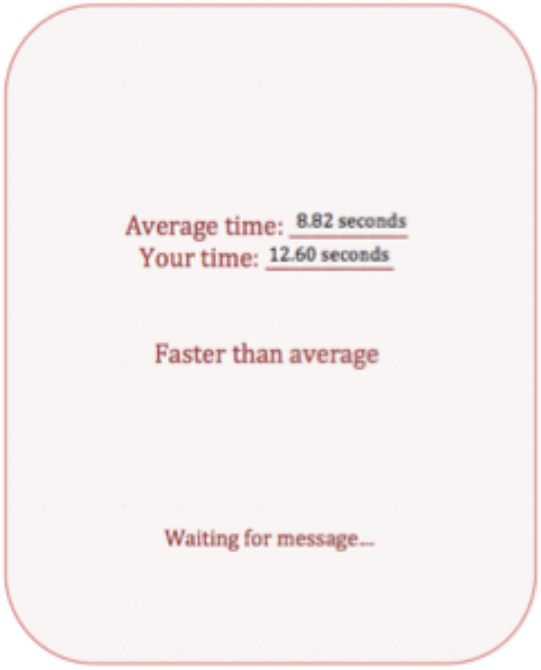


c) mock-up example of "I Spy" task (please note that actual stimuli reflected much higher degree of difficulty); d) example of performance feedback screen.

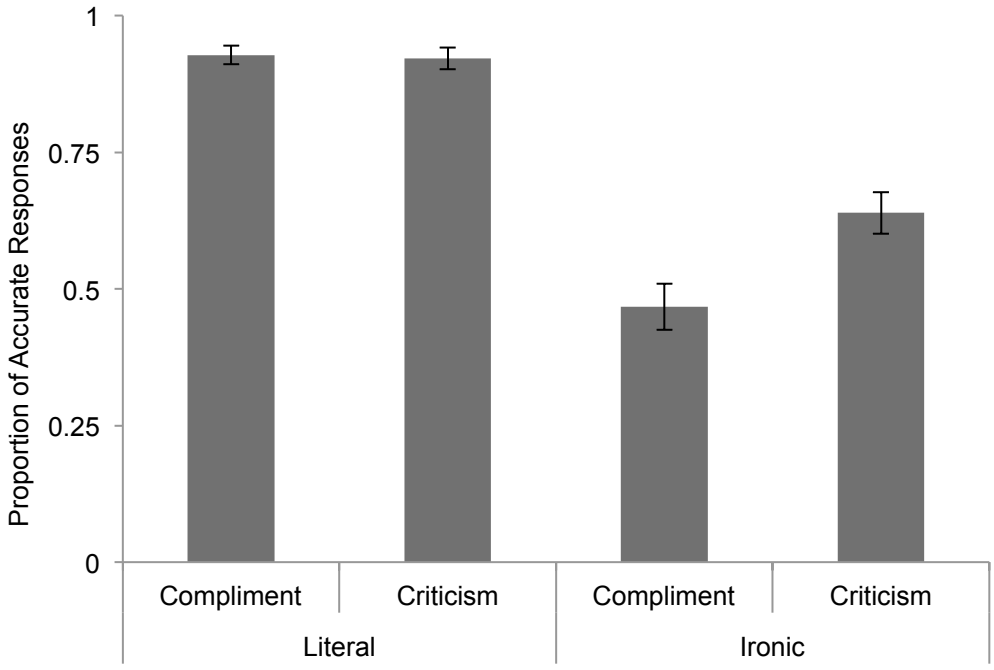


*Figure 2.* Proportion of accurate responses to speaker belief question as a function of statement type and valence (collapsed across social dominance of the speaker). Error bars represent standard error.

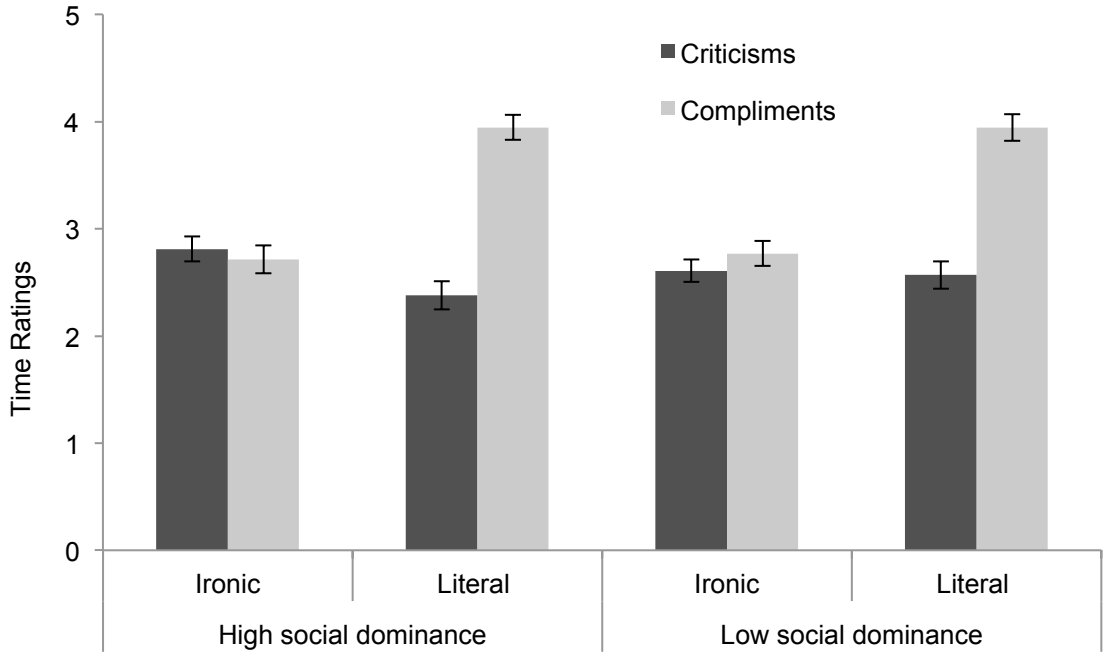


*Figure 3*. Amount of time participants wanted to spend with the virtual players, as a function of statement type, statement valence, and speakers' social dominance. Error bars represent standard error.

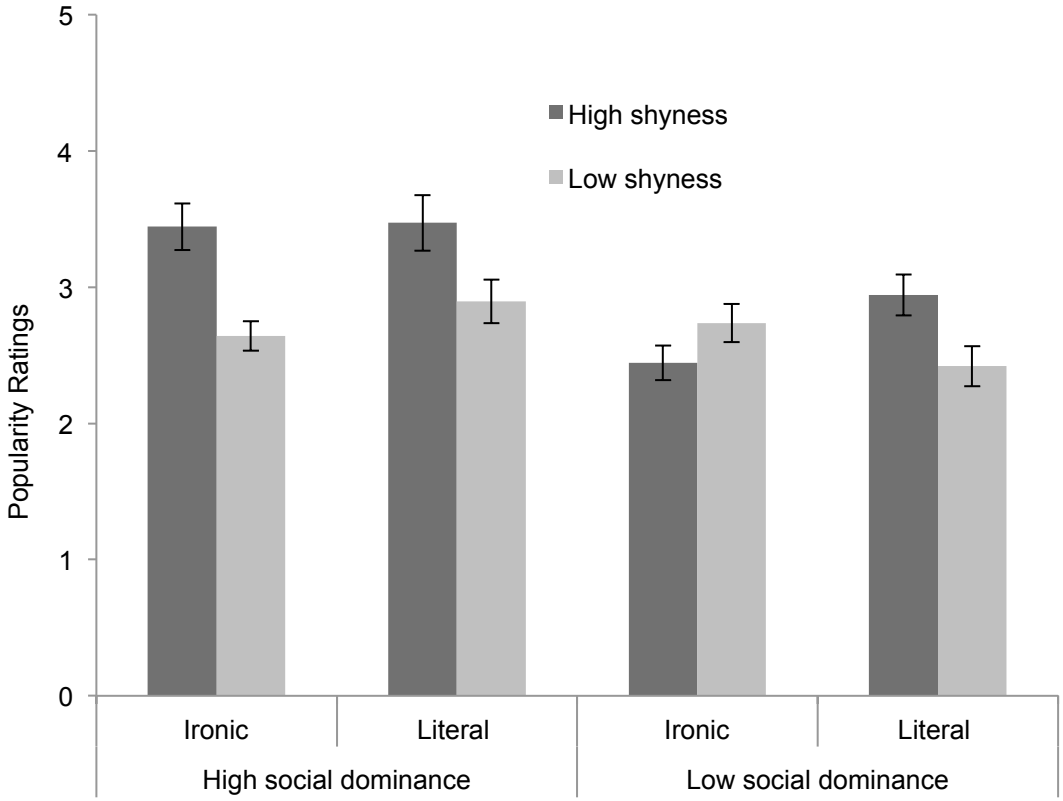


*Figure 4.* Popularity ratings for players who use criticisms as a function of statement type and social dominance of the speaker, for participants high and low in shyness. Error bars represent standard error.

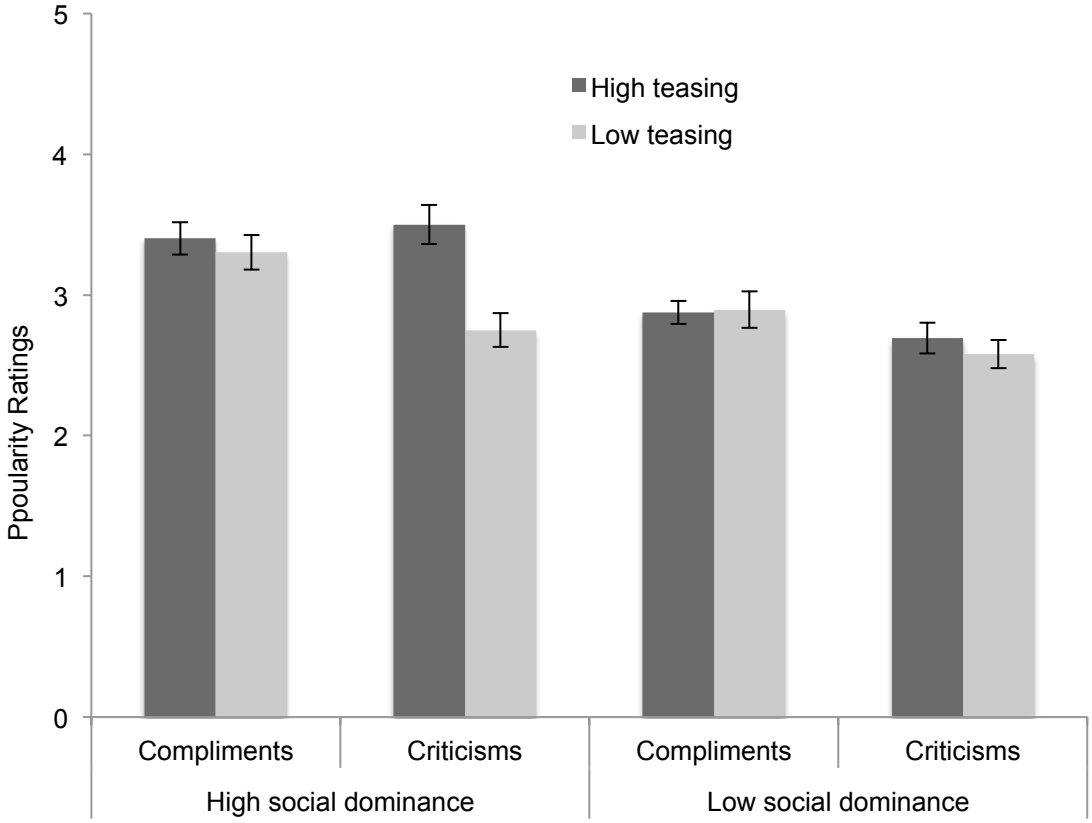


*Figure 5*. Popularity ratings for players, as a function of statement valence, teasing experience and social dominance of the speaker (collapsed across statement type). Error bars represent standard error.

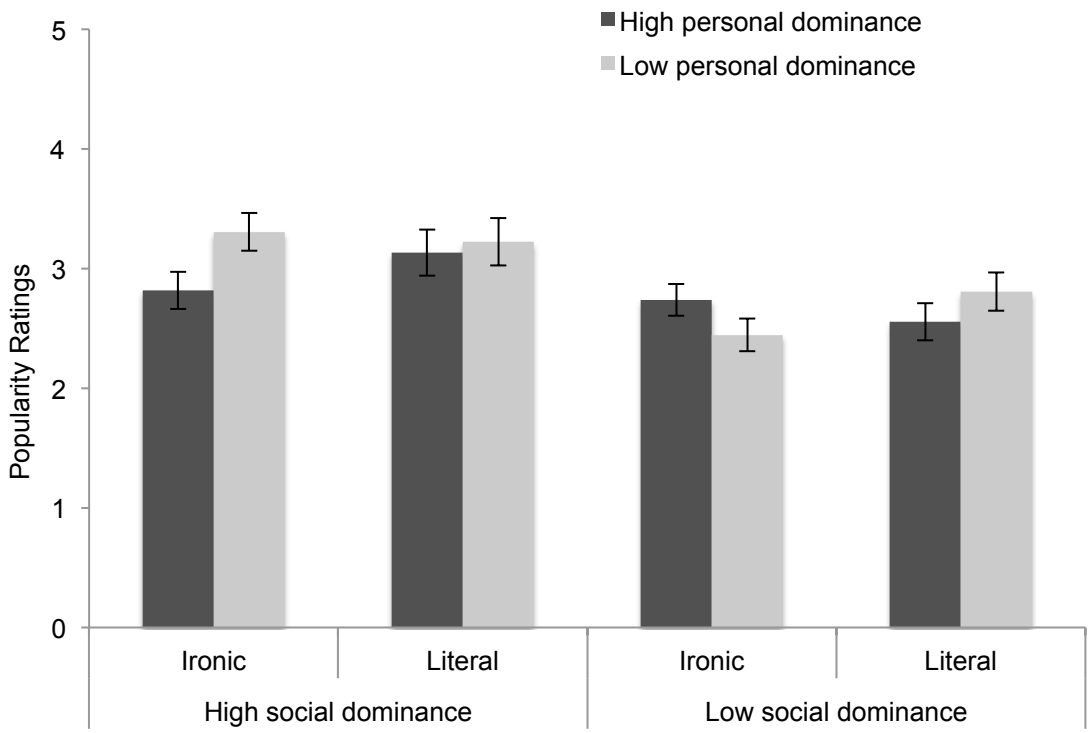


*Figure 6*. Popularity ratings for players who use criticisms as a function of statement type, personal dominance, and social dominance of the speaker. Error bars represent standard error.