Individual differences in irony production and use.

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Allison J. Markowitz

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Individual differences in irony production and use.

Allison Markowitz

Under the Supervision of Jeff Hancock

Department of Communication

What factors affect the way an individual processes and uses irony? The present research investigates whether cognitive flexibility, conversational indirectness, and personality traits may account for the differences in an individual's use of irony. The results of this study suggest that cognitive flexibility and personality traits predict irony use. An individual who is cognitively flexible is more likely to use irony and better at interpreting it because he/she can process the multiple interpretations presented by ironic language. Agreeable and conscientious people are less likely to use irony because of their innate personality traits and the harsh, critical nature of ironic language. These results suggest that agreeableness and conscientiousness are personality traits that determine which type of sarcasm an individual may use in daily interactions, while cognitive flexibility seems important to situational forms of irony. These individual differences support a view of irony as cognitively complex and interpersonally critical.

Irony Production and Use

"That was the best movie I've ever seen!" said one friend to another after watching a film that both friends thought was undeniably terrible. This kind of utterance is an example of verbal irony, a figurative form of language that is used to express something different, often the opposite, from the literal or intended meaning (Haverkate, 1990). In conversation, the listener of an ironic statement must distinguish between what is literally said and what is truly meant by the utterance. The complexity of irony makes this figurative form of language an interesting occurrence in everyday speech.

The present study looks at individual differences that affect the production and use of verbal irony. Results of this study suggest that there are identifiable individual differences in irony's production and use. This study investigates what factors may account for the differences among individuals in the use of ironic language such as cognitive complexity, conversational indirectness, and personality traits.

Nature of Irony

Irony is a type of indirect figurative speech. This discourse is a powerful tool used to convey ideas and attitudes that are different from the expected. Generally, positively phrased statements with negative intent ("The dress looks fantastic" directed toward an ugly outfit), or *ironic criticisms,* are more recognizable than negatively phrased statements with positive intent ("That's the ugliest dress I've ever seen" directed toward a beautiful dress), or *ironic compliments*. Although some definitions differ, sarcasm is a type of ironic criticism that explicitly involves a victim or target and is said in a critical or hurtful way (McDonald, 1999). Perhaps two of the most important features of irony are its cognitive complexity and its typically critical or negative interpersonal function.

Cognitively Complex

Ironic language is innately complex. In conversation, irony may be difficult to process and comprehend because of its indirect nature. Miscommunication among individuals in conversation frequently occurs due to the complexity of ironic language. It is sometimes difficult to distinguish ironic statements from literal ones. Theory suggests that when utilizing irony in verbal communication, multiple meanings and interpretations may be involved. It is the job of the listener to internalize the statement and interpret it as either literal or ironic.

Due to the complex nature of irony, there are numerous models that describe the process by which a listener may comprehend and understand an ironic statement. Proposed irony models include the Standard Pragmatic Model (Grice, 1975, 1978, 1979); Echoic Reminder Theory (Kreuz & Glucksberg, 1989); Echoic Mention Theory (Sperber & Wilson, 1984); the Allusional Pretense Theory (Kumon-Nakamura, et al., 1995); the Graded Salience Hypothesis (Giora, 1998); and the Direct Access Model (Gibbs, 1994). When comparing these models of irony production, most "advocate for a theory of irony by which various contextual and linguistic factors can act as constraints on the processing and comprehension of verbal irony" (Pexman & Zvaigzne, 2004, p. 144). The complexity of the multiple models describing irony production and comprehension make understanding this form of language difficult.

According to the three stages of the Standard Pragmatic Model by Grice (1975, 1978, 1979) when one person in the conversation uses irony, he/she violates conversational language rules. First, a listener interprets the literal meaning of the statement. After understanding the literal meaning, the listener compares the literal interpretation with the

context of the situation. Finally, the listener usually derives a new and ironic interpretation of the utterance.

The Direct Access View (Gibbs, 1994) contrasts with the Standard Pragmatic Model of irony use. The model proposes that individuals immediately understand the intended meanings of both literal and nonliteral discourse. This suggests that people do not analyze the complete literal meanings first before analyzing the context of the situation to determine the intended meaning. Gibbs (2000) showed that ironic utterances take no longer to process than literal ones. Ivanko and Pexman (2003) provide some support for the Direct Access Model. The study found that "ironic utterances can sometimes be interpreted just as quickly as literal utterances" suggesting that ironic statements are comprehended without a delay in processing (Ivanko and Pexman, 2003, p. 32).

The Allusional Pretense Model (Kumon-Nakamura, et al., 1995) of verbal irony proposes that the ironist uses *pragmatic insincerity* to interpret irony. The intended meaning is something other than what is alluded to. This model describes why a person would say one thing in order to mean something different. The allusions in the ironic remark correlate to expectations, preferences, or norms. According to this model, speakers use irony to refer to expectations that have been previously violated. If an expectation is not met, the speaker may use irony to highlight the difference between what was expected and what actually occurred. According to the statement by the moviegoers above, the ironist accomplishes this pragmatic insincerity by signaling that the receiver should reject the literal meaning that the movie was the best he/she has ever seen, alluding to the horrible opinion of the movie.

The Graded Salience Hypothesis (Giora, 1998) suggests that individuals should activate the literal meaning of the discourse initially before activating the ironic meaning.

The ironic meaning is activated after the literal meaning has been accessed and rejected as the intended meaning. Salient meanings are always processed initially regardless of the context or information available. While the Standard Pragmatic Model agues that a listener will initially access the literal meaning of the statement, this model explains that the listener will access whichever interpretation is most salient at the time of the utterance.

The numerous models of irony production and interpretation make clear that irony is a complex form of language. Indeed, the complexity of irony suggests that specific cues should be associated with irony to facilitate its comprehension. The literature on irony suggests that the cues associated with ironic processing are also multifaceted. Several communicative cues may be present in an exchange between speakers that affect the interpretation of ironic statements. These cues are categorized as either contextual, verbal, or paralinguistic.

Contextual cues include the differences between the ironic statement and situation in which the statement exists. The utterance will be taken as ironic if there is a recognizable difference between the ironic statement and the utterance within context. In the example above, if there is a large discrepancy between the ironic statement (the movie was the best he/she has ever seen) and the situation (the movie was indeed horrible because the projector broke midway through the film), then the contextual situational cue will signal ironic intent. Verbal cues use markers to indicate the ironic intent of the speaker. An example of a verbal cue signaling irony may include the use of adjectives. If the statement above said “That movie was horrible!” then the listener would interpret the adjective *horrible* to understand that the speaker actually enjoyed the film and made this statement with ironic intent. Paralinguistic cues are nonverbal signals including tone of voice and facial expressions that

may be associated with ironic utterances (Kreuz, 1996). For example, if the speaker rolled his/her eyes, the listener may interpret the paralinguistic facial expressions as signaling ironic intent.

The interpretation of irony can also be attributed to a multitude of context-based variables. Some variables include the use of exaggeration (Kreuz, 1996), pragmatic insincerity (Kumon-Nakamura, et al., 1995), the presence of a knowledgeable audience (Katz & Lee, 1993), and social knowledge and conventions (Katz & Lee, 1993). For example, Katz and Pexman (1997) found that when the occupational status of the speaker is salient, the uncertainty of the ironic statements becomes resolved. Because the speaker's occupation is known, the intent of the communicated verbal irony becomes clear. The type of relationship between the speaker and addressee may also influence the comprehension and interpretation of an ironic statement. Kreuz (1996) noted that people are more likely to use sarcastic irony in close relationships. Therefore, the large number of context-based variables between the speaker and the listener can promote the use of irony in conversation. If there are many complex variables affecting production and interpretation of irony, do people understand irony differently from one another?

Negative Interpersonal Function

Irony is often used in social environments in a critical way. Because irony may be regarded as negative and mean in social contexts, it has many interpersonal and relational implications. Irony's specific function, to criticize, may lead individuals to find a negative effect in the conversation. Roberts and Kreuz (1994) found that the primary discourse goals are "to show negative emotion," "to be humorous," "to clarify," and "to emphasize." Their research found that irony helped in a number of communication functions, one of which his

to express a negative attitude. Therefore, irony will be used in a negative context in order to negate the pessimistic attitude or situation. Kreuz (2000) also notes that speakers may express hostility in a more "socially acceptable way" by using ironic language. It may be that irony is used in negative interpersonal interactions to allow critical language to be acceptable in social situations. Thus, if irony is used in interpersonal or social settings, and is critical or harsh in nature, are there other factors that may affect how one uses irony? For example, should people who are more agreeable and friendly be less likely to use irony because they avoid critical evaluations of others?

Individual Differences and Irony Use

The evidence described above suggests that irony is both complex and interpersonally sensitive (i.e., critical or negative). Given that irony is cognitively complex, it may be the case that some individuals are better at processing and interpreting it than others. Are there measurable differences among ironists and their processing capabilities?

In one recent study, Ivanko & Pexman (2004) found that individual differences of sarcasm use are related to the production, interpretation, and processing of verbal irony. The researchers developed a valid scale of self-reported sarcasm use which includes a 15 item test of four types of sarcasm (general, embarrassment-diffusion, frustration-diffusion, face-saving). This study attempted to establish whether previous use of sarcasm will predict performance on irony tasks. The results revealed that speakers differ in their tendencies to use and interpret ironic language. First, self-reported sarcasm use predicted whether a participant would choose irony in a production task, validating the SSS. Second, self-reported sarcasm affected the interpretation of ironic comments. For example, male participants perceived the ironic criticisms to be more polite than females. Finally, the study

also suggested that frequent users of sarcasm tend to process literal and ironic statements faster than infrequent sarcasm producers.

While this research suggests that self-reported use of sarcasm can predict the interpretation of irony, what individual differences might predict how a person might produce irony? The goal of the present study was to examine preexisting individual differences (i.e. cognitive complexity and interpersonal functions) that predict irony use.

Consider first the complexity of producing figurative forms of language such as irony. One individual difference that may be important to irony production and comprehension is the degree to which a person typically expresses his/her meanings directly or indirectly. As noted above, most models of irony production and interpretation suggest that individuals adjust their understanding of the ironic statement, with the exception of the Direct Access Model (Gibbs 2000), in order to make sense of the message. Cognitive flexibility focuses on learning in a complex and ill-structured environment. Cognitive flexibility is the ability to "represent knowledge from different conceptual and case perspectives and, when the knowledge must later be used, the ability to construct from those different conceptual and case representations a knowledge ensemble tailored to the needs of the understanding or problem-solving situation at hand" (Spiro, 1992). In terms of irony production and use, the recipient of the information, whether the statement is ironic or not, must restructure his/her "knowledge in adaptive response to a changing situational demand" (Spiro, 1992).

When individuals interpret a message, they may use multiple contexts to rearrange the message in order to identify the statement as ironic. This ability to unravel the figurative intent of the statement can be measured by one's degree of cognitive flexibility. Therefore,

people with higher cognitive flexibility should be better at using and interpreting ironic statements. For example, according to the Standard Pragmatic Model by Grice (1975, 1978, 1979), someone hearing an ironic remark initially comprehends the literal meaning, assesses the context and environment in which the message was sent, and derives a new ironic interpretation of the statement. Given that multiple interpretations are necessary, then the more cognitively flexible the recipient, the more capable the person should be at reconstructing the original statement in order to determine the ironic intent.

A second individual difference associated with the cognitive complexity of irony is a person's skills at using indirect language. Given the complex mental abilities required to comprehend and produce irony, does the practice of using irony make perfect? Consider how people differ in the ways they express their meanings directly or indirectly (Holtgraves, 1997). Conversational indirectness measures the extent to which people actively search for and find indirect meanings in others' remarks (Holtgraves, 1997). For example, an individual may say "Wow, I could sure use a back massage" to a conversational partner. In reality, the speaker really wishes to say "I want you to give me a back massage." People frequently vary the degree of indirectness based on the social context of the conversation. Therefore, an important question may be whether the degree of conversational indirectness is related to one's use of irony. Ivanko and Pexman (2004) observed this relationship and in the present study we also examined the correlation between conversational indirectness and the self-reported sarcasm. If individuals use indirect language often, they should then be more practiced at using irony and feel more comfortable producing and interpreting it.

Consider next the interpersonal aspects of irony. Given the negative function of irony, it may be the case that only certain types of people will be comfortable producing this

negative and critical language. If this is the case, then personality factors may account for the production and use of irony. Personality traits may affect the manner in which an individual converses with others and how often he/she uses irony. For instance, the Five-Factor Model (Costa & McCrae, 1992) describes the five general dimensions for human personality traits: agreeableness, openness, conscientiousness, extraversion, and neuroticism. The "Big-Five" factors relate to social, behavioral, cognitive, and personality dimensions (Kelly, 2006).

Agreeableness characterizes an individual who is empathetic or altruistic in nature. These people are trusting, forgiving, willing to compromise, easy to get along with, and modest (Costa & McCrae, 1992). The NEO-FFI items for agreeableness include statements such as "I try to be courteous to everyone I meet" or "I generally try to be thoughtful and considerate." An individual who is intent on trying to please and agree with others should be unlikely to use critical forms of language such as irony. Thus, it was predicted that agreeable people should be less likely to produce and understand irony.

Conscientiousness describes an individual who is dutiful, efficient, achievement-seeking, orderly, and deliberate in action (Costa & McCrae, 1992). Examples of the conscientiousness factor include "I keep my belongings clean and neat" and "I have a clear set of goals and work toward them in an orderly fashion." An individual who is conscientiousness may be less likely to use and produce irony because these people are meticulous and careful in their speech. A conscientious person may be more hesitant to use indirect, ironic language because it is a critical form of language and may be misunderstood.

The *openness* factor characterizes individuals who are imaginative, excitable, unconventional, curious, and open to experiences and ideas (Costa & McCrae, 1992). "I don't like to waste my time daydreaming" and "I often try new and foreign foods" are two

items representing the openness factor. If an individual is more open and curious, he/she may be more adept at producing and understanding irony. Open individuals may accept harsh or critical language. It is predicted that open people may use and interpret ironic language.

Extraversion typifies an individual who is outgoing and sociable (Costa & McCrae, 1992). "I laugh easily. I like to have a lot of people around me" and "I often feel as if I'm bursting with energy" are two items from the extraversion factor of the NEO-FFI. It was predicted that an extravert would be more likely to use irony because of his/her sociable, gregarious nature. An extravert is outgoing and may be open to using indirect or ironic language in a harsher manner. These individuals are more socially practiced and may be more adept at using irony in a way that will not hurt others.

Finally, *neuroticism* reflects an individual who is tense, irritable, moody, shy, and often impulsive (Costa & McCrae, 1992). This factor includes items such as "I am not a worrier" and "I often feel tense and jittery." It is less clear how a neurotic individual may process and use irony. A neurotic individual may have a negative view of the world and may use irony to match that viewpoint. On the other hand, because the main use of irony is to be critical in social contexts, a neurotic individual may be hesitant to use irony, especially given that they are typically uncomfortable in social situations. Therefore, we propose the research question: how does neuroticism affect an individual's production and use of irony?

The Present Study

The current research investigates several individual differences that may predict irony production and use including cognitive flexibility, conversational style, and personality traits. Participants completed a battery of questionnaires including the Self-Report Sarcasm Scale (SSS), the Conversational Indirectness Scale (CIS), and the NEO-Five Factor Inventory

(NEO-FFI). The SSS measured the participants' self-reported irony use while the CIS and NEO-FFI tapped conversational indirectness and personality traits, respectively. Participants also completed the Wisconsin Card Sort Test (WCST) computer task to measure the degree of cognitive flexibility. Individuals who are more cognitively flexibility, exhibit conversational indirectness, and are agreeable and open, were expected to be more frequent users of sarcasm than those who did not display these characteristics.

Method

Participants

One hundred nineteen students, 33 male and 86 female, participated in a communication style study at Cornell University that investigated various aspects of language and personality characteristics. The mean age was 19.0 years (*SD* = 2.59). Approximately 69.7% of participants identified themselves as Caucasian, 10.8% Asian, 10% African American, 4.2% Hispanic, .8% Native American and 4.2% as other. Students received extra course credit for one hour of participation. Participants were recruited from several large introductory communication courses. A systematic recruiting procedure was followed to make certain that the participants were unaware of the purpose of this study.

Materials

The experiment included three computer-administered surveys measuring self-reported sarcasm, conversational indirectness, and personality traits as well as one computer task measuring cognitive flexibility. To evaluate the participant's degree of sarcasm, the Sarcasm Self-Report Scale (SSS; Ivanko & Pexman, 2004) was used. The mean ratings for the Self-Report Sarcasm Scale are presented in Table 1. This scale asked participants to rate how sarcastic they think they are on 15 items. For example, participants were asked to rate

the likelihood they would use sarcasm with someone they just met and the likelihood they would use sarcasm when complimenting someone. The SSS evaluated four types of sarcasm including general sarcasm, embarrassment-diffusion sarcasm, frustration-diffusion sarcasm, and face-saving sarcasm (Ivanko & Pexman, 2004). The alpha crombach reliability for each factor in the SSS was general sarcasm, .81; embarrassment-diffusion, .80; frustration-diffusion, .53, face-saving sarcasm, .75.

The Conversational Indirectness Scale (CIS; Holtgraves, 1997) was used to measure the degree to which individuals produce and interpret indirect speech in conversation. The CIS included 19 items with both production (e.g., “There are many times when I prefer to express myself indirectly”) and interpretation statements (e.g., “I try to consider all interpretations of a person’s remarks before deciding what he or she really meant.”). The reliability coefficients were .85 for interpretation and .87 for production.

The NEO-FFI was used to assess the participant’s degree of agreeableness, openness, conscientiousness, extraversion, and neuroticism (Costa & McCrae, 1992). The NEO-FFI consists of 60 items and asked participants to determine the extent to which they agree or disagree with the statements presented in the questionnaire. The reliability coefficients were .88 for neuroticism, .81 for extraversion, .77 for openness, .76 for agreeableness, and .87 for conscientiousness.

The WCST measures an individual’s ability to shift cognitive schemas in response to a changing environment. In this study, the WCST was used to evaluate cognitive flexibility by switching the matching criteria in a card sorting game (e.g. color of the shape, number of shapes, or type of shape). After a certain number of card matching sets were completed (e.g., always match red cards with red cards), the matching rule was changed (e.g., now match

squares with squares). The participant must realize that the matching criteria has changed and must discover the new matching principle. The results of the WCST provided their number of perseverative errors which describes the participants' failure to discover and maintain the card sorting rule. An error was scored as perseverative if it followed the same principle as the immediately preceding response, but did not correspond to the current correct sorting principle. The subject's ability to decipher this change and correctly switch the matching patterns is regarded as the individual's degree of cognitive flexibility.

Procedure

The participants were seated in individual testing rooms in the communication laboratory where they were assigned an identification number to maintain anonymity. Students were provided an informed consent form and briefed on the goals and procedures of the study. They were then introduced to the online questionnaire. Participants completed the Self-Report Sarcasm Scale, the Conversational Indirectness Scale, and the NEO-FII questionnaires. Upon completion of the online questionnaires, the participants notified the examiner that he/she was ready to move on to the second part of the experiment.

Participants were next instructed on how to complete the computer-version of the Wisconsin Card Sort Test. The WCST program presents four "piles" of cards on the screen, each displaying a set of either red, blue, yellow, or green shapes. The subject was asked to take the card from a fifth pile and match it with one of the four original cards according to an unidentified matching principle. (e.g. If the fifth pile of cards had green stars, the participant would have to determine if the card should be matched with a card with green shapes or a card with stars.) The participant was asked to sort the cards by dragging it to the correct pile on the screen. No other instructions were provided. The subject was given a "right" or

"wrong" response after each matching attempt and was asked to continue sorting until the task was complete. This task measured the participant's ability to recognize that there were three possible ways to match the cards (by shape, color, or number of shapes on the card). Upon completion of the three online questionnaires and the WCST, the participants were debriefed and released from the study.

Results

The mean ratings responses for males and females for each task (SSS, CIS, NEO-FFI, WCST) are presented in Table 1.

Recall that the four factors of the SSS are general sarcasm, embarrassment-diffusion sarcasm, frustration-diffusion sarcasm, and face-saving sarcasm (Ivanko & Pexman, 2004). A 4 (sarcasm type) x 2 (gender) repeated measure general linear model, with sarcasm type as the repeated measure and gender as the between-subjects factor, was used to analyze the data. No effect of gender was observed, $F(1,117) = 1.80$, *ns*. The production rates of the four different types of sarcasm, however, were significantly different, $F(1,117) = 1.80$, *ns*. Post hoc pair-wise comparisons (*Bonferonni* corrected, $p < .008$) revealed that general sarcasm rates were higher than face-saving and embarrassment-diffusion sarcasm, and that frustration sarcasm rates were higher than face-saving and embarrassment-diffusion sarcasm.

A 2 (indirectness type: production vs. interpretation) x 2 (gender) repeated measure general linear model, with indirectness type as the repeated measure and gender as the between-subjects factor, was used to analyze the conversational directness data. Men reported using more conversational indirectness than women, $F(1,117) = 4.25$, $p < .05$. Overall, participants reported higher levels of interpreting indirect language than producing

it, F (1,117) = 50.15, $p < .001$. There was no interaction between gender and indirectness type.

A 5 (personality factor) x 2 (gender) repeated measure general linear model, with personality factor as the repeated measure and gender as the between-subjects factor, was used to analyze the conversational directness data. The personality factor was significant, $F(1,117) = 26.80$, $p < .001$. Post hoc pair-wise comparisons (*Bonferonni* corrected, $p < .005$) revealed that neuroticism scores were lower than the other four factors and that openness scores were lower than conscientiousness scores.

Finally, the data from the WCST revealed no difference between males and females on the number of perseverative errors made completing the task, $t(118) = .90$, *ns*.

The means and standard deviations for the SSS, CIS, NEO-FFI, and WCST are presented in Table 2.

Individual Differences in Sarcasm Use

The first-order correlations between the four SSS factors and the other individual difference measures are reported in Table 3 and the regression models predicting sarcasm type are presented in Table 4. The results indicate that agreeableness and conscientiousness are inversely related to general sarcasm use.

In order to determine which individual differences are most predictive of sarcasm, stepwise regression models were developed for each of the four types of sarcasm. The first model examined general sarcasm. The predictor variables in the model included a measure of cognitive flexibility (perseverative errors), the measures of conversational indirectness, both production and interpretation, and the five personality characteristics (agreeableness, openness, conscientiousness, extraversion, and neuroticism). The model accounted for 7.4%

of the variance (R = .272), and was significant, $F(1,117) = 9.38$, $p < .01$. Of the predictors, only agreeableness significantly predicted general sarcasm. Agreeableness was inversely related to general sarcasm, suggesting that more agreeable individuals were less likely to use general forms of sarcasm.

The second regression model examined embarrassment-diffusion sarcasm. All 8 predictor variables were entered into the step-wise model. The model accounted for .11% of the variance (R = .332), and was significant, $F(2,117) = 7.17$, $p < .001$. Of the predictor variables, only agreeableness and conscientiousness significantly predicted this form of sarcasm. Both agreeableness and conscientiousness were inversely related to embarrassment-diffusion sarcasm, suggesting that more agreeable and conscientious individuals were less likely to use embarrassment-diffusion sarcasm.

The third regression model examined frustration-diffusion sarcasm. Once again, all 8 predictor variables were entered into the model. The model accounted for 3.9% of the variance (R = .196), and was significant, $F(1,117) = 4.70$, $p < .05$. Of the 8 predictor variables, only perseverative errors significantly predicted frustration-diffusion sarcasm. Perseverative errors were inversely related to frustration-diffusion sarcasm, suggesting that individuals with lower levels of cognitive flexibility (i.e., more perseverative errors) were less likely to use frustration-diffusion sarcasm.

The fourth regression model examined face-saving sarcasm. All 8 predictor variables were entered into the step-wise model. The model accounted for 16.8% of the variance (R = .410), and was significant, $F(2,116) = 11.74$, $p < .001$. Of the predictor variables, only agreeableness and conscientiousness significantly predicted sarcasm. Both agreeableness and

conscientiousness were inversely related to face-saving sarcasm. Individuals high in agreeableness and conscientiousness were less likely to use face-saving sarcasm.

Perseverative errors were also correlated with frustration-diffusion sarcasm and face-saving sarcasm.

Discussion

The goal of this study was to identify individual differences that may predict irony and sarcasm use. By investigating the relationship between cognitive flexibility, conversational indirectness, and personality traits, it may be possible to ascertain what factors affect an individual's use of sarcasm. The results of this experiment showed that individual differences in cognitive capabilities and personality affect self-reported irony production and use.

Individual Differences in Sarcasm Use

Consider first the use of general sarcasm (e.g., How sarcastic do you think you are? Or, the likelihood that you would use sarcasm with your best friend.). First, participants perceived themselves as using this general type of sarcasm more often than any other type of sarcasm (embarrassment-diffusion, frustration-diffusion, face-saving). Analysis of the individual difference variables showed that those who rated themselves as agreeable individuals were less likely to use a form of general sarcasm. Recall that an agreeable individual is generally characterized by being willing to compromise, is positive in nature, and tends to avoid confrontation. The finding that more agreeable individuals were less likely to use general sarcasm is consistent with the prediction that the critical and harsh aspects of ironic language should hinder or prevent an agreeable individual to use sarcasm in

conversation. These individuals are more positive and would tend to steer away from mean, indirect language.

Embarrassment-diffusion sarcasm is generally used to rid an individual of self-humiliation or to prevent humiliation for another person in conversation. For example, one SSS item asked participants to rate how likely they would use sarcasm if "You just got engaged over the weekend and are telling your friends about it over coffee…" An individual using embarrassment-diffusion sarcasm may respond by saying "My terrible boyfriend proposed to me this weekend." The results revealed that two personality factors, agreeableness and conscientiousness, were inversely related to embarrassment-diffusion sarcasm. Those who are agreeable and conscientious are less likely to use embarrassment-diffusion sarcasm in conversation.

It may be that agreeable people, who are typically positive and willing to compromise, will not use negativity or critical language in interpersonal contexts. Agreeable individuals may try to avoid saying negative things when encountering an embarrassing person or situation. This claim supports the hypothesis that agreeable individuals will be less likely to use an interpersonal type of embarrassment-diffusion sarcasm in order to avoid being harsh and critical with their conversational partner.

Recall that a conscientious person likes order, is methodical in his/her actions, and tends to be in control of most situations. Conscientious people speak clearly so no misinterpretation of the message is possible. They also try to avoid ambiguity in conversation. It was predicted that conscientious individuals would not use ironic language in embarrassing contexts because this type of language is disorderly and complex. The results supported the hypothesis, finding that conscientious individuals are not likely to use

embarrassment-diffusion sarcasm. To further investigate why conscientious individuals may not use embarrassment-diffusion irony, the correlation between conscientiousness and conversational indirectness was investigated. The results suggest that those who are conscientious are also less likely to use indirect language ($r = -.267$; $p = .003$). Therefore, an orderly and methodical person may choose to use direct rather than indirect language.

Frustration-diffusion sarcasm was also investigated. This type of sarcasm relates to a situational form of irony. When a frustrating event has occurred, the participants in the conversation cope with the frustration by using sarcastic remarks. Frustration-diffusion was the second most frequent type of sarcasm used by participants in this study. For example, one SSS item asked participants to rate how likely they would use sarcasm in a situation such as if "You just found out that you made a huge mistake on the assignment you just handed in…" An individual may respond to this situation with frustration-diffusion sarcasm by saying, "I can't wait to get problem #3 back, I definitely got that one correct!" The only predictor of frustration-diffusion sarcasm was cognitive flexibility, measured by the number of perseverative errors produced on the WCST task.

It is important to note that frustration-diffusion sarcasm refers to remarks made about negative situations. Although frustration-diffusion sarcasm involves a negative reference, there is typically no interpersonal component. This may explain why agreeableness was not related to this type of sarcasm. Instead, cognitive flexibility appears to be more important for situational forms of sarcasm, such as frustration-diffusion sarcasm. Hancock (2002) demonstrated that a speaker is more likely to use irony when the situation or context of the conversation is negative. For example, an individual who just received a failing grade on an exam might choose to use frustration-diffusion sarcasm by saying, "I'm so happy I failed that

one!" Note that, like the other forms of irony discussed above, a speaker makes uses a statement with a positive meaning to convey a negative attitude. In this case, the negative attitude is towards a negative situation and not towards another individual. Because this form of irony is not interpersonal, interpersonal factors such as agreeableness do not play a role. Instead, cognitive flexibility, which measures an individual's ability to adapt to changes in meaning, appears to be the most important predictor of situational irony. The more capable an individual is of adapting their thinking to the ironic meaning, the more likely they are to use irony to refer to negative situations.

Finally, face-saving sarcasm is used when individuals may be unfamiliar with their conversational partner. For example, one item that is used to determine face-saving sarcasm use is "Likelihood you would use sarcasm with someone you just met…" This type of sarcasm may also be used to maintain a good image with someone, often during conflict, where the wrongful individual may continue to fight in order to avoid the embarrassment of looking bad in the situation. Results indicated that individuals who are both agreeable and conscientious are less likely to use face-saving sarcasm. Agreeable and conscientious individuals tend to comply with others in conversation. These individuals appear to avoid face-saving sarcasm because they try to avoid conflict and confrontation.

Non-Predictors of Irony Use

Irony is categorized as both cognitively complex and interpersonal; thus, it is possible that some factors may be stronger predictors of irony use than others. In this study, conversational indirectness, openness, extraversion, neuroticism, and gender did not predict irony use. Recall that conversational indirectness is an individual's skills at using figurative language and finds indirect meanings in others' remarks (Holtgraves, 1997). It was predicted

that an individual who utilizes conversational indirectness and is more practiced at using it will be more likely to produce and interpret irony. Results of this study, however, revealed that conversational indirectness was not correlated with individual's use of irony. It should be noted that the correlations were in the predicted direction (positive), suggesting that a larger study may be able to detect a correlation. Nonetheless, the overall pattern of results suggests that other factors, including personality traits and cognitive complexity, are stronger predictions of sarcasm use.

Three personality factors, openness, extraversion, and neuroticism, were not significant predictors of sarcasm use. It was predicted that an individual who has an open personality may use ironic language. Open individuals are generally willing to experience new things and use creativity and imagination often (Costa & McCrae, 1992). Because these individuals may be open to using indirect and cognitively complex language, it was predicted that they would use this form more sarcasm. However, the results of this study did not find that openness was a significant predictor of irony use.

Extraverts were expected to use irony because these individuals are outgoing and sociable in nature (Costa & McCrae, 1992). Extraverts enjoy talking to people, are high-spirited and energetic, and are active individuals. An extravert who enjoys conversing with others may be able to interpret a harsh, critical ironic statement and use it in a way to not hurt others. However, the results indicate that extraversion was not a significant predictor of irony use. An extravert may not choose to use irony or comprehend it because they are generally very positive people. If irony is negative and mean, extraverts may not use irony because they are positive and optimistic people.

Finally, we were interested in whether neuroticism plays a role in the production and use of verbal irony. If neurotic individuals frequently experience unpleasant emotions, discontent, and tension, would they use irony? Or, are neurotic individuals uncomfortable in social situations and subsequently avoid using negative, critical forms of language? Neither of these possibilities was supported by the research. Neuroticism was not a significant predictor; it is still unclear as to the role of a neurotic personality in the use of sarcastic language.

Gender differences in cognitive flexibility, conversational indirectness, and personality characteristics were also investigated in this study. In previous language and communication research, Gibbs (2000) found that males were more likely to use irony than females in natural conversational settings. Additionally, Colston (2004) studied gender differences in irony use and found a match between the greater risk males take while using irony and a perceived greater risk of misunderstanding of verbal irony in males than rather than females. However, the researchers did not explain that males use verbal irony because its pragmatic functions fit better with their discourse goals versus those reported by females, as suggested in other irony literature. Ivanko and Pexman (2004) found that men were more likely to use sarcastic irony in most contexts than females. However, other than these few studies, there is relatively scarce empirical evidence supporting the claim that males are more likely to use sarcasm in conversation than females. The present research found no significant gender effects. Gender did not play a role on any of the dimensions examined in this study, suggesting additional research is required to understand the relationship between gender and irony use.

Implications for the Nature of Irony

The results of this study indicated that an agreeable person may use general sarcasm, embarrassment-diffusion sarcasm, and face-saving sarcasm, but not frustration-diffusion sarcasm. Conscientious individuals are more inclined to use both embarrassment-diffusion sarcasm and face-saving sarcasm. Lastly, individuals who are cognitively flexible are more likely to use frustration-diffusion sarcasm; cognitive flexibility seems to only be a factor when the sarcasm is situational. These results suggest that agreeableness and conscientiousness are key personality factors that determine which type of sarcasm an individual may use in daily interactions, while cognitive flexibility seems important to situational forms of irony.

What do these results reveal about the nature of irony? Consider first the cognitive flexibility findings and their implications for the complexity of irony. Recall that the Standard Pragmatic Model of irony (Grice, 1975) proposes that a listener interprets irony in a series of stages. The interpreter first hears the statement and internalizes its literal meaning, then decides if the statement is to be interpreted as literal or ironic, and then computes the ironic meaning. This model asserts that the context is brought into consideration after an initial literal interpretation of the statement. The fact that cognitive flexibility is related to the use of situational forms of irony supports the Standard Pragmatic Model assumption that irony involves multiple meanings. That is, cognitive flexibility's relationship to irony use suggests that the listener must interpret the literal meaning and decide if the utterance is literal or ironic in order to derive meaning from the statement.

The cognitive flexibility results do not support the Direct Access Model (Gibbs, 1994) which proposes that individuals interpret ironic statements immediately in conversation. This model does not support the notion that multiple meanings are present in

irony comprehension. Instead, it suggests that the intended meaning is comprehended immediately when the ironic utterance is heard. According to the Direct Access Model, cognitive complexity then should not play a role in the comprehension of sarcasm because cognitive flexibility is a skill related to interpreting the multiple meanings of irony. The results of the present study propose that cognitive flexibility is a predictor of irony use and refute the direct interpretation of irony as suggested by Gibbs.

Irony's use in a critical, social environment may provide some evidence as to how or why certain individuals may be more adept and capable of using it. As mentioned previously, irony has been assumed to have a negative, interpersonal function. Hancock (2002) found that speakers are more likely to produce and use irony when the situation or context of the conversation is negative. Kreuz (2000) also found that speakers will use irony to express enmity and frustration in a manner that is acceptable in social contexts. These findings support the assumption that irony has both a negative and interpersonal function. According to the results of the present research, individuals with agreeable personalities tend not to use harsh and critical sarcasm because of their inherent personality traits. Agreeable people tend to avoid conflict and negativity, suggesting that irony is negative and interpersonal in function.

The results of this study contrast with the Tinge Hypothesis, proposed by Dews and Winner (1995), in which "the evaluative tone of the literal meaning of ironic utterances automatically colors the hearer's perception of the intended meaning" (p. 3). According to this hypothesis, irony is used in conversation to soften the effects of its harsh and critical form. The researchers observed that people judged ironic criticisms as less critical than literal criticisms. Our data does not support this viewpoint. Because agreeable individuals will steer

away from environments and conversations that are insensitive and judgmental, they should take advantage of irony if it allowed them to soften criticisms; however, this was not the case because agreeable people avoided forms of irony that involved a negative or critical component.

Conclusion

The goal of this study was to examine the preexisting individual differences related to the cognitive complexity and interpersonal nature of ironic language. The results of this study show that there are important individual differences that affect the way humans use and produce irony. An individual's cognitive capabilities and personality traits may affect the production, use, and processing of verbal irony. An individual who is more cognitively flexible is more likely to use irony and better at interpreting it because he/she can handle the multiple interpretations presented by ironic language. On the personal level, these individuals may be more adept at functioning in a social setting by automatically reconfiguring the figurative language into the intended ironic meaning. Agreeable and conscientious people are also less likely to use irony because of their innate personality traits and the harsh, critical nature of ironic language.

This study provides insight into how and why irony is used and also which types of people use irony. The interaction between cognitive abilities and personality factors provide further evidence that irony is a complex form of language that involves multiple meanings and has a negative interpersonal function. No previous link between cognitive flexibility, personality, and irony use has been investigated thus far in figurative language research. This study sheds light into the fundamental qualities of social language and the ways in which complex ironic language is used. The way we converse in everyday life is fundamentally

figurative; by understanding irony, we may improve our understanding of language, perhaps our most vital art and skill.

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Appendix A

Self-Report Sarcasm Scale

Please rate yourself on the following dimensions.
NOTE: Please ask the experimenter for an example if you would like one

Likelihood that you would use sarcasm with someone you just met
1 2 3 4 5 6 7
not at all likely extremely likely

How sarcastic do you think you are?
1 2 3 4 5 6 7
not at all sarcastic extremely sarcastic

Likelihood that you would use sarcasm when insulting someone
1 2 3 4 5 6 7
not at all likely extremely likely

Likelihood that you would use sarcasm with your best friend
1 2 3 4 5 6 7
not at all likely extremely likely

How sarcastic would your friends say you are?
1 2 3 4 5 6 7
not at all sarcastic extremely sarcastic

Likelihood that you would use sarcasm with a new colleague at work
1 2 3 4 5 6 7
not at all likely extremely likely

Likelihood that you would use sarcasm while complimenting someone
1 2 3 4 5 6 7
not at all likely extremely likely

How often do you make sarcastic statements during daily interactions?
1 2 3 4 5 6 7
not at all often extremely often

You and your roommate are having a serious argument about how to share the household chores…
1 2 3 4 5 6 7
not at all likely extremely likely

You score the winning point for your team in the final basketball game of the season…
1 2 3 4 5 6 7
not at all likely extremely likely

You just found out that you made a huge mistake on the assignment you just handed in…
1 2 3 4 5 6 7
not at all likely extremely likely

You are in a mile-long line up at the grocery store, waiting to pay for a prescription…
1 2 3 4 5 6 7
not at all likely extremely likely

You just got engaged over the weekend and are telling your friends about it over coffee…
1 2 3 4 5 6 7
not at all likely extremely likely

You just got a big promotion at work. You are having dinner with your family to celebrate your achievement…
1 2 3 4 5 6 7
not at all likely extremely likely

You have to be at work in 15 minutes and your friend just accidentally locked your keys in the car…
1 2 3 4 5 6 7
not at all likely extremely likely

Appendix B

NEO-Five Factor Inventory (NEO-FFI)

Please read the following statements carefully and circle the choice that best describes the extent to which you agree or disagree with the statement. Describe yourself honestly and as accurately as possible.

STRONGLY DISAGREE SD
DISAGREE D
NEUTRAL N
AGREE A
STRONGLY AGREE SA

1. I am not a worrier.

SD D N A SA

2. I like to have a lot of people around me.

SD D N A SA

3. I don't like to waste my time daydreaming.

SD D N A SA

4. I try to be courteous to everyone I meet.

SD D N A SA

5. I keep my belongings clean and neat.

SD D N A SA

6. I often feel inferior to others.

SD D N A SA

7. I laugh easily.

SD D N A SA

8. Once I find the right way to do something, I stick to it.

SD D N A SA

9. I often get into arguments with my family and co-workers.

SD D N A SA

10. I'm pretty good about pacing myself so as to get things done.

SD D N A SA

11. When I'm under a great deal of stress, sometimes I feel like I'm going to pieces.

SD D N A SA

12. I don't consider myself especially "light- hearted".

SD D N A SA

13. I am intrigued by the patterns I find in art and nature.

SD D N A SA

14. Some people think I'm selfish and egotistical.

SD D N A SA

15. I am not a very methodical person.

SD D N A SA

16. I rarely feel lonely or blue.

SD D N A SA

17. I really enjoy talking to people.

SD D N A SA

18. I believe letting students hear controversial speakers can only confuse and mislead them.

SD D N A SA

19. I would rather cooperate with others than compete with them.

SD D N A SA

20. I try to perform all the tasks assigned to me conscientiously.

SD D N A SA

21. I often feel tense and jittery.

SD D N A SA

22. I like to be where the action is.

SD D N A SA

23. Poetry has little or no effect on me.

SD D N A SA

24. I tend to be cynical and skeptical of others' intentions.

SD D N A SA

25. I have a clear set of goals and work toward them in an orderly fashion.

SD D N A SA

26. Sometimes I feel completely worthless.

SD D N A SA

27. I usually prefer to do things alone.

SD D N A SA

28. I often try new and foreign foods.

SD D N A SA

29. I believe that most people will take advantage of you if you let them.

SD D N A SA

30. I waste a lot of time before settling down to work.

SD D N A SA

31. I rarely feel fearful or anxious.

SD D N A SA

32. I often feel as if I'm bursting with energy.

SD D N A SA

33. I seldom notice the moods or feelings that different environments produce.

SD D N A SA

34. Most people I know like me.

SD D N A SA

35. I work hard to accomplish my goals.

SD D N A SA

36. I often get angry at the way people treat me.

SD D N A SA

37. I am a cheerful, high-spirited person.

SD D N A SA

38. I believe we should look to our religious authorities for decisions on moral issues.

SD D N A SA

39. Some people think of me as cold and calculating.

SD D N A SA

40. When I make a commitment, I can always be counted on to follow through.

SD D N A SA

41. Too often, when things go wrong, I get discouraged and feel like giving up.

SD D N A SA

42. I am not a cheerful optimist.

SD D N A SA

43. Sometimes when I am reading poetry or looking at a work of art, I feel a chill or wave of excitement.

SD D N A SA

44. I'm hard- headed and tough- minded in my attitudes.

SD D N A SA

45. Sometimes I'm not as dependable or reliable as I should be.

SD D N A SA

46. I am seldom sad or depressed.

SD D N A SA

47. My life is fast- paced

SD D N A SA

48. I have little interest in speculating on the nature of the universe or the human condition.

SD D N A SA

49. I generally try to be thoughtful and considerate.

SD D N A SA

50. I am a productive person who always gets the job done.

SD D N A SA

51. I often feel helpless and want someone else to solve my problems.

SD D N A SA

52. I am a very active person.

SD D N A SA

53. I have a lot of intellectual curiosity.

SD D N A SA

54. If I don't like people, I let them know it.

SD D N A SA

55. I never seem to be able to get organized.

SD D N A SA

56. At times I have been so ashamed I just wanted to hide.

SD D N A SA

57. I would rather go my own way than be a leader of others.

SD D N A SA

58. I often enjoy playing with theories or abstract ideas.

SD D N A SA

59. If necessary, I am willing to manipulate people to get what I want.

SD D N A SA

60. I strive for excellence in everything I do.

SD D N A SA

Appendix C

Conversational Indirectness Scale (CIS)

Please read the following items and circle the choice that best describes the extent to which you agree or disagree with the statement, ranging from *1 = disagree completely* to *7 = agree completely*. Describe yourself honestly and as accurately as possible.

1. I try to uncover people's motivations by what they say.

disagree 1 2 3 4 5 6 7 agree completely

2. There are many times when I prefer to express myself indirectly.

1 2 3 4 5 6 7

3. Most of what I say can be taken at face value, and there is no need to look for a deeper meaning.

1 2 3 4 5 6 7

4. I try to consider all interpretations of a person's remarks before deciding what he or she really meant.

1 2 3 4 5 6 7

5. Many times it is important to deeply analyze what people say in order to understand their real meaning.

1 2 3 4 5 6 7

6. My remarks often have more than one meaning.

1 2 3 4 5 6 7

7. I will often look below the surface of a person's remark in order to decide what they really mean.

1 2 3 4 5 6 7

8. I don't usually spend very much time analyzing people's remarks.

1 2 3 4 5 6 7

9. Many times, people are not totally sure what I really mean when I say something.

1 2 3 4 5 6 7

10. In order to understand someone's remark, I will often look at why it was said rather than was said.

disagree 1 2 3 4 5 6 7 agree completely

11. Often times there are many different ways in which my remarks can be interpreted.

1 2 3 4 5 6 7

12. I don't usually look for deeper meanings in the remarks of others.

1 2 3 4 5 6 7

13. There is usually no need to for people to look below the surface to understand what I really mean.

1 2 3 4 5 6 7

14. Often there is more to what I say than what appears on the surface.

1 2 3 4 5 6 7

15. In most conversations that I observe or take part in, I find that the most important meanings are often below the surface.

1 2 3 4 5 6 7

16. I try to be a successful communicator by uncovering a speaker's deeper meaning.

1 2 3 4 5 6 7

17. People have to spend time thinking about my remarks in order to understand my real meaning.

1 2 3 4 5 6 7

18. What I mean with a remark is usually fairly obvious.

1 2 3 4 5 6 7

19. I usually assume that there are no hidden meanings to what someone is saying.

1 2 3 4 5 6 7

Table 1.

Sarcasm Self- Report Scale (SSS) Items and Mean Ratings (standard deviations in parentheses)

SSS Item	Mean	SD
General Sarcasm		
Likelihood that you would use sarcasm with someone you just met	4.12	1.84
How sarcastic do you think you are?	4.76	1.31
Likelihood that you would use sarcasm with your best friend	6.12	1.27
How sarcastic would your friends say you are?	4.91	1.48
Likelihood that you would use sarcasm with a new colleague at work	3.21	1.75
How often do you make sarcastic statements during daily interactions?	4.29	1.47
Embarrassment Diffusion Sarcasm		
Likelihood that you would use sarcasm while complimenting someone	2.89	1.73
You score the winning point for your team in the final basketball game of the season…	2.99	1.90
You just got engaged over the weekend and are telling your friends about it over coffee…	2.83	2.02
You just got a big promotion at work. You are having dinner with your family to celebrate your achievement…	3.31	1.99
Frustration Diffusion Sarcasm		
You just found out that you made a huge mistake on the assignment you just handed in…	4.17	2.01
You are in a mile-long line up at the grocery store, waiting to pay for a prescription…	5.16	1.71
Face-Saving Sarcasm		
Likelihood that you would use sarcasm when insulting someone	5.85	**1.36**
You and your roommate are having a serious argument about how to share the household chores…	4.00	**1.94**
You have to be at work in 15 minutes and your friend just accidentally locked your keys in the car…	**4.73**	**2.06**

Table 2.

Means and Standard Deviations for the SSS, CIS, NEO-FFI, and WCST Task

	Males		Females		Overall	
Variable	**M**	**SD**	**M**	**SD**	**M**	**SD**
SSS						
General Sarcasm	5.09	1.11	4.95	1.05		
Embarrassment Diffusion	3.40	1.89	2.91	1.57		
Frustration Diffusion	4.86	1.24	4.62	1.44		
Face Saving	3.63	1.52	3.32	1.43		
CIS						
Production	4.31	0.89	3.84	1.09		
Interpretation	4.91	0.84	4.67	.90		
NEO-FFI						
Agreeableness	3.43	0.62	3.73	.51		
Openness	3.57	0.57	3.41	.63		
Conscientiousness	3.69	0.68	3.84	.62		
Extraversion	3.37	0.65	3.71	.57		
Neuroticism	2.80	0.84	2.86	.79		
WCST						
Perseverative Errors	16.76	14.39	17.10	12.51	17.01	13.00

Table 3.

Standardized Beta Coefficients of the 4 types of Sarcasm by Conversational Indirectness, the Five Personality Traits, and Perseverative Errors.

	General Sarcasm	Embarrassment Diffusion Sarcasm	Frustration Diffusion Sarcasm	Face-Saving Sarcasm
CI Interpretation	.051	.079	.170	.134
CI Production	.057	.042	.077	.006
Neuroticism	-.058	-.204	-.046	-.051
Extraversion	.074	.001	.189	-.091
Openness	.008	.031	-.084	-.038
Agreeableness	-.261*	-.237*	-.019	-.229*
Conscientiousness	-.244*	-.328	-.207*	-.127
Perseverative Errors	-.107	.113	-.233*	-.054*

Note: + $p < .1$, * $p < .05$, ** $p < .01$

Table 4

Regression Models Predicting Sarcasm Types

General Sarcasm Model

	B	S.E.	Beta	t-value	p-value
Constant	6.88	.63		10.96	.001
Agreeableness	-.521	.17	-.272	-3.06	.003

Embarrassment-diffusion Sarcasm Model

	B	S.E.	Beta	t-value	p-value
Constant	7.649	1.24		6.17	.001
Agreeableness	-.642	.23	-.246	-2.79	.006
Conscientiousness	-594	.27	-.197	-2.24	.03

Frustration-diffusion Sarcasm Model

	B	S.E.	Beta	t-value	p-value
Constant	5.042	.21		24.44	.001
Perseverative errors	-.021	.01	-.196	-2.17	.03

Face-saving Sarcasm Model

	B	S.E.	Beta	t-value	p-value
Constant	8.41	1.04		8.08	.001
Agreeableness	-.737	.22	-.282	-3.31	.001
Conscientiousness	-.610	.19	-.269	-3.16	.002