

UNDERSTANDING THE CHALLENGES OF SHARING HUMOR ACROSS LINGUISTIC  
AND CULTURAL BOUNDARIES

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# UNDERSTANDING THE CHALLENGES OF SHARING HUMOR ACROSS LINGUISTIC AND CULTURAL BOUNDARIES

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Humor can promote bonding and bring people closer. However, due to lack of common knowledge regarding cultural references, non-native speakers of the common language (NNS) may have difficulties in understanding and appreciating the humor shared among native speakers of that language (NS). Humor that is intended to promote bonding might end up differentiating those who don't get it from those who do. Especially in NS dominant culture and context, NNS may miss out when NS are perhaps bonding the most around shared humor. This dissertation provides a systematic understanding of the challenges of sharing humor across linguistic and cultural boundaries. Through in-depth interviews, the first study identified the potential misalignment in NS and NNS's assumptions about one another's knowledge as an underlying reason that may account for both the sources of confusion and the interactional challenges perceived by East Asian NNS in sharing American NS humor. The second study further verified this by evaluating NS and NNS's abilities to estimate each other's knowledge using an online experiment.

## BIOGRAPHICAL SKETCH

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## LIST OF ABBREVIATIONS

NNS      Nonnative speakers

NS      Native speakers

EA      East Asian

AM      American

# Chapter 1: Introduction

With increasing globalization and the use of English as a common language, communication and collaboration across countries and cultures has become commonplace. Multinational companies and teams have benefitted from the diversity of perspectives, a broad array of ideas, expertise and resources, increased creativity, and so forth, brought by bringing together individuals from various linguistic and cultural backgrounds (e.g., Shin & Zhou, 2007; Stahl et al., 2010; Thomas, 1999; Wang et al., 2011).

Despite these benefits, outside of work settings, individuals still tend to interact more with their cultural ingroups, and they often form language-based cliques (DiStefano & Maznevski, 2000; Yuan et al., 2013). Due to language barriers and fluency issues, nonnative speakers (NNS) of the common language may withdraw from “non-essential” informal communication with native speakers (NS) altogether (Tange & Lauring, 2009). This is unfortunate because many opportunities for starting new collaborations, developing new relationships, and exchanging information arise spontaneously in informal chats (Kraut et al., 1990). In a way, the very diversity that benefits global communicators also imposes challenges and constraints that limit their access to the full benefits of diversity.

One such constraint is sharing humor. Sharing a laugh can have benefits at the individual, interpersonal, and organizational level. For instance, humor has long been thought of as a coping strategy and can effectively promote positive emotions (e.g., Abel, 2002; Freud, 1960). Laughing at the same humor makes people like each other more and promotes relational closeness (e.g., Cann et al., 1997), altruism (Curry & Dunbar, 2013), and group cohesiveness (e.g., Tremblay, 2017). However, sharing humor can be challenging across linguistic and cultural boundaries. Due to lack of common knowledge and language fluency issues, NNS may have difficulty

understanding and appreciating the humor shared among NS. Consequently, humor that is intended to promote bonding might end up differentiating those who don't get it from those who do. Especially when NS predominate in a setting, NNS may miss out when NS are perhaps bonding the most around shared humor.

While there has been extensive research on task-oriented communication in multilingual multicultural contexts (e.g., Duan et al., 2019, 2021; Gao et al., 2014, 2015), investigations into informal communication remain scarce, and research on intercultural humor is even more scarce. Existing literature on intercultural humor (e.g., Bell & Attardo, 2010; Sinkeviciute & Dynel, 2017 for a review) mainly focuses on the linguistic features of the content of humor based on conversation analysis of a few selected excerpts. Additionally, the analyzed conversations have taken place in a wide variety of cultural contexts, with NNS participants of different levels of language fluency and with different types of relationships with their NS interactants. As a result, it is difficult to synthesize the findings across studies to develop a coherent theory. For instance, humor in conversations between NS (of English) and Hong Kong Chinese NNS (of English) involved references specific to Chinese culture (Cheng, 2003) that would not likely be found in similar conversations in the U.S. Consequently, prior work does not provide a clear answer to fundamental questions such as what are some sources of confusion for NNS in understanding NS humor in NS dominant culture and context, and what are some distinctive challenges in interacting with NS when humor is involved?

To answer these questions, it is important to first understand how humor message is communicated in conversations. The intersection of several linguistic and cognitive theories of humor and the theory of conversational grounding, namely common ground or common knowledge, provides a useful framework to examine this phenomenon.

For humor to be amusing, some argued that it must simultaneously activate two different schemas (mental models of some aspects of the world) (Edwards & Middleton, 1987; Mandler, 1979) in the recipient and that the schemas are opposite in a special sense (Raskin, 1985; Wyer & Collins, 1992). Flamson and Barrett (2008) proposed the Encryption Theory of Humor, which posits that humor functions as a signal of common knowledge that the humor initiator uses to obtain information about the humor recipients' possession of this common knowledge. Their studies provided empirical evidence that listeners do need to possess the common knowledge to decrypt the humor. It remains unknown whether and how the speaker presupposes the potential audience's knowledge when producing the humor.

From the perspective of conversational grounding, it takes the effort of both the speaker and the listener to constantly monitor the status of common ground to make sure what has been said has been understood (Clark, 1996; Clark & Brennan, 2004; Clark & Schaefer, 1989). Interlocutors draw inferences about each other's knowledge (and thus what they mutually know) from two sources: prior assumptions about the conversational partner's knowledge (initial identification of common ground) and interactive feedback (to update common ground over the course of interaction) (Krauss & Fussell, 1991, 2014). To communicate effectively, both sources must provide reasonably accurate ideas about the partner's knowledge status. Research has shown that individuals' prior assumptions about one another's knowledge are fairly accurate but also subject to bias (e.g., Fussell & Krauss, 1992; Nickerson et al., 1987). However, these studies did not examine whether accuracy of predicting others' knowledge is reduced when partners are from different linguistic or cultural groups.

Over the course of an interaction, feedback from the listener helps speakers revise their assumptions about the listener's knowledge, and they can use these updated assumptions to fine

tune, repair or repeat their message. However, the interactive feedback may not always be available (e.g., Chen, 1990) or reliable due to the listener's desire to appear knowledgeable (e.g., Holtgraves, 2013) and cultural difference in using backchanneling devices (e.g., Wong, 2000). Furthermore, asking for clarification of humorous messages may be seen as "unsophisticated" (Bell, 2013) and can pose face threat to both the speaker and the hearer (Zajdman, 1995, p.332).

In intercultural contexts, both lack of common ground in cultural and linguistic knowledge, and lack of (or unreliable) interactive feedback (as reviewed above) make humorous interactions between NS and NNS even more challenging in two respects. First, NS humor that often draws on culture-specific knowledge or subtle pragmatics (e.g., sarcasm) of the language is more likely to fail for NNS (Bell & Attardo, 2010) who don't share the knowledge and pragmatic norms (Biesenbach-Lucas, 2007; Economidou-Kogetidis, 2011; Lim, 2021; Peters et al., 2016). For instance, research has found that NNS had great difficulties in recognizing the humor across various types of jokes (Farnia et al., 2020), in interpreting implicatures (Bouton, 1988, 1992) and sarcasms in English (Oprea & Magdy, 2020). Second, East Asian NNS tend not to signal lack of understanding (Li, 1999) or may send confusing backchannels such as "yeah" when they don't actually understand (Wong, 2000). Such lack of or deceptive feedback from the listener will make the speaker believe the listener possesses the knowledge critical to understanding the humor when in fact the listener does not. Moreover, the speaker with such misperception might wrongly assume that other NNS would possess the knowledge, because after all, people often infer the knowledge of others based on a small number of individuals they have interacted with (Fussell & Krauss, 1992; Hamill et al., 1980; Nisbett et al., 1976). This may result in NS's misperception reinforced through a cycle of inaccurate assumptions about NNS's knowledge, cracking humor that requires the knowledge, which likely to fail for NNS, and further unreliable feedback from NNS.

This dissertation seeks to examine interculturally failed humor (defined as NNS's inability to understand NS humor) through the lens of common ground, aiming to identify the challenges both in the identification of an initial common ground and in updating common ground over the course of humorous interaction. To address these goals, I conducted two studies. In the first study, I utilized in-depth interviews to uncover sources of confusion experienced and reported by East Asian NNS in intercultural humor across different contexts and to identify the interactional challenges specific to intercultural humorous interactions. I then align the findings along two stages of the grounding process – identifying common ground, and updating common ground. Findings from the first study revealed that a potential misalignment of the assumptions of each other's knowledge between NS and NNS might be key to both the sources of confusion (NS potential overestimation of NNS's knowledge) and the interactional challenges for NNS (NNS potential overestimation of NS's knowledge).

These findings informed the second study, in which I examined and verified both American NS and East Asian NNS's assumptions about each other's knowledge, especially the kind of knowledge that American humor often draws on, such as public figures and commonly shared views about them. I conducted an online experiment in which both American NS and East Asian NNS were asked to identify a series of American public figures and answer humor-related knowledge about them, and then estimate the percentage of their cultural ingroup and outgroup who would possess the knowledge. I found that despite being quite accurate at estimating other's knowledge about American public figures, NS significantly overestimated NNS's humor-related knowledge of the public figures that were commonly known by most NS, and that NNS had little clue as to both NS and NNS's knowledge.

This dissertation makes a first step and an original contribution to a systematic understanding of interculturally failed humor through the lens of identifying and updating common ground in humorous interactions. Understanding what causes intercultural humor to fail and what makes grounding humorous messages challenging can better inform the design of new tools to address the identified issues.

In the remainder of this dissertation, I first review current literature (Chapter 2) on grounding, grounding challenges in multilingual multicultural communication, grounding challenges in humorous communication, and existing approaches to intercultural humor. Then I present Study 1 (Chapter 3), an interview study investigating the perceived sources of confusion and interactional challenges in intercultural humor from East Asian NNS's perspective, followed by Study 2 (Chapter 4), examining how both American NS and East Asian NNS estimate their cultural ingroup and outgroup's knowledge. Subsequently, I will provide a general discussion integrating insights from both studies and how they contribute to the understanding of and can inform the design of technologies for facilitating intercultural humor (Chapter 5), followed by a conclusion (Chapter 6).

## Chapter 2: Literature Review

While there has been sporadic research on intercultural humor, answers to questions such as whether NNS are capable of understanding NS humor, what makes humor fail more for NNS, and the like, are hardly conclusive and vary greatly across contexts and cases. This dissertation seeks to develop a systematic understanding of interculturally failed humor through the lens of conversational grounding (e.g., Clark, 1996). Conversational grounding provides a theoretical framework useful to examine what potentially causes humor to fail more across linguistic and cultural boundaries, because humor in a sense, functions as a signal of the fact of common knowledge, a signal that the humor initiator uses to obtain information about the humor recipients with respect to their possession of shared common knowledge (Flamson & Barrett, 2008). It is conceivable that a lack of common ground between intercultural interlocutors may play a role in interculturally failed humor.

In the rest of this chapter, I start by outlining the theory of conversational grounding and reviewing empirical findings on how interlocutors identify an initial common ground and update the common ground through interactive feedback. Then, I review the grounding challenges in non-humor communications in multilingual multicultural contexts, both in terms of identifying and updating common ground. After that, I review psychological and linguistic theories of humor through the lens of conversational grounding and identify the interactional challenges of grounding in contexts involving humor. Lastly, I present a detailed review of current research on intercultural humor that highlights inconsistencies and inadequacies regarding several issues that this dissertation seeks to address.

## **Grounding and challenges in identifying and updating common ground**

Conversational grounding refers to the collaborative process by which interlocutors establish mutual knowledge (common ground) that what has been said has been understood as intended or well enough for current purposes (Clark, 1996; Clark & Brennan, 2004; Clark & Schaefer, 1989). Entering into a conversation, interlocutors presuppose certain pieces of common ground to initiate the conversation, often through perspective-taking (Krauss & Fussell, 2014), then with the feedback in each exchange or lack thereof, adding to or revising the common ground. That is, interlocutors draw inferences about what their partner knows (and thus what is mutually known) from two sources: prior assumptions about the conversational partner's knowledge and interactive feedback (Krauss & Fussell, 1991, 2014). To communicate effectively, both of these sources must provide the interlocutor reasonably accurate ideas about their partner's knowledge status.

### **Identifying an initial common ground through perspective-taking**

Perspective-taking in communication refers to the act of taking the perspective of conversational partners (including what they know, think, feel, and believe) into consideration when constructing a message. These implicit theories and assumptions about each other's perspectives affect the social construction of meaning and the interpretive context of the constructed message (Krauss & Fussell, 2014).

Initial assumptions about what the conversation partner knows derive from two bases of evidence: personal common ground—direct personal experiences with one another, and communal common ground—shared information based on community membership (Clark, 1996; Clark & Marshall, 1981). Personal common ground involves a history of joint personal experiences that individuals have done, talked about and experienced together, and distinguishes friends from

strangers. When communicating with strangers, before any personal common ground is yet to be established, people may base their assumptions about what the stranger knows on the category membership the stranger is supposed to belong to. For instance, Kingsbury (1968) found that when asked for directions by a stranger, respondents gave longer and more detailed answers when the request was prefaced with “I’m out of town” or with a heavy accent than without such information. This suggested that the respondents might have been led to believe that the requester belonged to a non-local community membership lacking the local knowledge.

Individuals can be fairly accurate at inferring what others know based on their category membership, especially when “others” share the same membership. For instance, Fussell and Krauss (1991) had Columbia University (located in New York City) students rate their familiarity with New York City landmarks of varying recognizability and estimate the percentage of other NYC residents who would be familiar with the landmarks. Their estimates turned out to be closely correlated with the actual familiarity rated by NYC residents. In their subsequent study of a similar design, Fussell and Krauss (1992) found that students could accurately estimate their fellow students population’s knowledge of a variety of public figures of varying identifiability. In both studies, participants tailored their referring expressions such that the amount of information provided decreased as perceived identifiability to others increased, demonstrating that interlocutors take their partner’s perspective into consideration when constructing a message. Similarly, Lau and colleagues (2001) replicated these findings in East Asian culture, providing further evidence that individuals make fairly accurate assumptions about what others who share the same category membership know.

However, these assumptions about others’ possession of knowledge can be erroneous and may be subject to bias. Evidence of this tendency can be found in the line of research into what

has been called “false consensus bias” where people believe that their preferences, beliefs and behaviors are more common among the general population than they actually are (Ross, Greene, & House, 1977). Such bias can be extended to knowledge estimation such that individuals’ estimation of others’ knowledge is biased in the direction of their own knowledge (Nickerson et al., 1987; Fussell & Krauss, 1992). Nickerson and colleagues (1987) examined the relationship between individuals’ abilities to correctly answer “general knowledge” questions and their estimates of the percentage of others who could do so. By comparing the mean estimates by those who knew the correct answers to those who didn’t, they concluded that people are more likely to attribute a bit of knowledge to others if they know it than they do not. Fussell and Krauss (1992)’ studies provide further evidence to this by plotting the knowledgeable and unknowledgeable participants’ estimates (respectively) against the actual percentages of people who possess the knowledge. As suggested by the regression intercepts for named and unnamed public figures, those who could identify a public figure (than those who could not) judged the public figure to be more identifiable to others.

This cognitive bias can be further complicated by the type of knowledge (general vs. specialist) (Bromme et al., 2001), the estimator and estimatee’s expertise (expert, lay person, novice) (Bromme et al., 2001, 2005; Hinds, 1999; Wittwer et al., 2008), and how the knowledge is labeled, etc. (Bromme et al., 2001). For instance, according to Bromme and colleagues (2001), known general knowledge was more overestimated than known specialist knowledge (Internet concepts), whereas unknown general knowledge was more underestimated than unknown specialist knowledge. When the distinction between general or specialist knowledge was blurred, experts significantly overestimated the commonality of specialist knowledge, but the blurring had no significant impact on the estimation of the commonality of general knowledge. Further, experts

tended to make more conservative and cautious estimates with respect to the commonality of specialist knowledge than lay persons did. Specifically, for the easiest items, experts significantly underestimated the commonality of the knowledge whereas lay persons were rather accurate; but for relatively difficult items, experts' estimates showed no significant bias in either direction whereas lay persons significantly overestimated the commonality. Additionally, experts who had more experience communicating with lay persons produced more accurate estimates of lay persons' knowledge than experts who lacked such experience. These findings provide insights into how accurate individuals can estimate outgroup members' knowledge, especially when the group membership is marked by the imbalance of the possession of certain knowledge, much as the imbalance of the possession of cultural and linguistic knowledge between NS and NNS.

While these perspective-taking studies show that speakers' prior assumptions about their conversational partner's knowledge affect the speaker's construction of the initial message, communication is, after all, a collaborative process (Clark, 1996) that takes the effort of both the speaker and the listener to construct meaning through interaction. The availability of interactive feedback can allow interlocutors to accumulate common ground upon which future interactions can draw.

### **Updating common ground using interactive feedback**

In interactive contexts, for a message to be sufficiently grounded, both the speaker and the listener need to coordinate on the process and content (Clark & Brennan, 2001; Clark & Schaefer, 1989). The listener needs to provide positive evidence either verbally (e.g., a backchannel acknowledgement such as "uh huh", or a relevant next turn) or nonverbally (e.g., a head nod, a smile, eye contact showing continuous attention), to signal to the speaker that the message has been understood. If the evidence is also taken by the speaker as proper understanding, then both parties can establish the mutual belief that they have succeeded in and reached joint closure on

grounding the previous message and are ready to move on to the next. The listener might instead provide negative evidence to signal to the speaker that grounding has not occurred (e.g., a request to repeat or clarify). If the evidence is taken by the speaker as non-understanding or misunderstanding, the speaker might need to provide clarification or repetition per the listener's request, or repair their message, and then further assess the listener's understanding, until both parties mutually believe that the utterance is understood sufficiently well for the current purpose (Clark, 1996; Clark & Brennan, 2001).

Over the course of interaction, the evidence the speaker receives from the listener helps revise and update their assumptions about the listener's knowledge, such that they can fine tune their message to adapt to their listeners' knowledge. For instance, research has found that speakers used increasingly briefer descriptions for the same reference over the course of conversation (Clark & Wilkes-Gibbs, 1986; Isaac & Clark, 1987) and the number of turns needed to establish a reference declined as the mutual knowledge (common ground) increased (Clark & Schaefer, 1987; Clark & Wilkes-Gibbs, 1986; Isaacs & Clark, 1987; Schober & Clark, 1989). Further, the availability of interactive feedback may reduce the speaker's reliance on prior assumptions about the listener's knowledge to formulate the message. For instance, Fussell and Krauss (1992) evaluated individuals' prior assumptions about their conversation partner's knowledge independent of the communication to examine how they affect message construction. Contrary to their expectations, speakers provided little additional information to the names of the stimuli regardless of their estimated recognizability to the conversation partner. The authors suggest that this was because speakers knew that they could use their conversation partner's feedback to revise the message accordingly, thus they tried to save the effort of adding redundant descriptive

information in their initial message, consistent with the principle of least collaborative effort (Clark, 1996, p.224).

However, interactive feedback from the listener may not always be available or reliable. First, lack of negative feedback may not be a reliable indicator that grounding has occurred. Communicators may withhold negative feedback. For instance, Chen (1990) found that when encountering messages that were not communicated well, instead of showing “signals of disconfirmation” such as frowns, participants simply withheld backchannel responses as a way of showing disconfirmation (Chen, 1990). Second, positive feedback such as direct acknowledgement may not necessarily reflect actual understanding, as it might be motivated by a desire to appear knowledgeable and to avoid appearing incompetent or ignorant (Holtgraves, 2013, p.140). These phenomena create challenges for the speaker to revise and update their assumptions about the listener’s status of knowledge (and thus common ground) based on the latter’s interactive feedback.

### **Grounding challenges in multilingual multicultural contexts**

Grounding using a common language can be challenging for interlocutors from different cultures speaking different native languages (e.g., Duan et al., 2019, 2021a, 2021b; Gao & Fussell, 2017). In this section, I discuss challenges in identifying common ground both in terms of language and in terms of culture; and challenges in updating common ground through interactive feedback or lack thereof in multilingual multicultural contexts.

#### **Challenges in identifying common ground**

Nonnative speakers from different language communities may not share the same conventions of language use. For instance, vocabularies (e.g., what everyday objects are called) that are common for NS may not be familiar to NNS (Brysbaert et al., 2021). Sociolinguistic

studies have also found that NNS show lower pragmatic competence (e.g., misuse of politeness features) in both written (Biesenbach-Lucas, 2007) and spoken (Scarella & Brunak, 1981) English. Their ability to express and interpret affective meanings is also hindered by using a foreign language (Gao et al., 2017; Nguyen & Fussell, 2015). Further, newcomers from a different cultural community may not share the cultural facts and norms that local residents take as common ground for their cultural ingroups (Clark, 1996; Yuan et al., 2013). These create challenges for cross-lingual, cross-cultural interlocutors to form accurate assumptions about what one another knows.

Native speakers of English are often unaware of the language difficulties NNS face (e.g., He et al., 2017). For instance, NS are often not aware when they are speaking too quickly for NNS partners to follow (Duan et al., 2019); NS also often don't know what vocabulary NNS do and do not know and what terms would best be avoided or clarified (Duan et al., 2018, 2021; Gao et al., 2015). NNS' unfamiliarity with the pragmatic norms of the foreign language can result in sounding too direct and be perceived by NS as impolite and inappropriate especially for written communication such as emails (Biesenbach-Lucas, 2007; Economidou-Kogetidis, 2011). However, once NS came to know that the writer was NNS, the perception of inappropriateness can be mitigated (Lim, 2021). This suggests that NS might adjust their expectations of common ground regarding the writer's pragmatic knowledge of the language since it becomes clear that the writer belongs to a social category who do not share the same language conventions. Additionally, NS and NNS showed differences in their use of syntax, lexical modifiers, and subtleties of tones when expressing emotions (Biesenbach-Lucas, 2007; Nguyen & Fussell, 2015). This creates another challenge for NS and NNS to set expectations of one another regarding how to interpret and ground the affective meanings of their messages.

Lastly, each culture has its own set of cultural norms and facts (e.g., basics of the culture/country's history, geography, current events and cultural artifacts) that people would suppose most others in that culture know (Clark, 1996). However, it is virtually impossible for a cultural outsider or newcomer to know all the cultural norms and facts that an insider takes as common ground for their cultural ingroups. Still, when entering into a conversation that involves cultural norms and facts, interlocutors need to presuppose certain common ground in order to initiate the first message. What do they expect one another to know to begin with? To date, there has been little investigation into how accurately individuals can estimate cultural outgroup members' knowledge. We can best infer from the current understanding of the social distribution of knowledge. For instance, if the "curse of knowledge" bias holds true for intercultural communicators, it is likely that cultural insiders (NS) will overestimate outsider (NNS)'s knowledge. Further, if cultural insiders can be viewed as experts of the cultural knowledge, and cultural outsiders as lay persons, following what has been reviewed earlier on the knowledge estimation between experts and lay persons, it can be expected that a cultural insider's prior experience with cultural outsiders can help produce more accurate estimates. By and large, given the discrepancies in linguistic and cultural knowledge between NS and NNS, and the importance of an accurate estimation of common ground for effective communication, investigation into how intercultural interlocutors estimate one another's knowledge is pressing.

### **Challenges in updating common ground through interactive feedback**

It is not only challenging for intercultural communicators to identify initial common ground, updating their common ground in the ongoing conversation can be difficult, too. NNS give fewer responses in communication with NS (Li, 1999) and NNS may use discourse markers (e.g., yes/yeah) differently which may confuse NS (House, 2013; Wong, 2000). These challenges can be exacerbated in multiparty conversations in which NS outnumber NNS, because the discussion

can move forward rapidly (Duan et al., 2019), leaving no room for NNS to interrupt to request clarification. Additionally, the conversation may involve idiomatic language and cultural references only shared, understood and thus easily grounded among NS (Yuan et al., 2013). The grounding success between NS can create the illusion that communication is successful among all members when it's not (He et al., 2017; Li et al., 2005), leaving NNS further behind. The more NNS are left behind, the more difficult it can become for them to pinpoint the source of confusion to request clarification (Li, 1999; Takano & Noda, 1993). Furthermore, for reasons such as maintaining face, NNS (especially East Asians) often refrain from interrupting the conversation for clarification (Harzing & Feely, 2008; Li et al., 2005). In some cases, NNS may even send confusing backchannels such as “yeah”, that lead NS to think they are following the conversation when they are not (Wong, 2000).

### **Grounding challenges of humor**

Like any form of communication, for conversational humor to be successfully communicated, humor participants need to collaborate on the grounding process. The humor producer starts off by assuming certain common ground, and formulates the humorous message in a way such that only those who possess the supposedly shared knowledge and attitudes are able to understand the message as intended, and (possibly) interpret it as funny (Flamson & Barrett, 2008). Then the humor recipient provides evidence as to whether the message has been grounded sufficiently for the current purpose, which in this case is typically the humor producer wanting to amuse the recipient (Berger, 2017; Moran et al., 2014).

Positive evidence suggesting successful grounding of humor usually takes the form of laughter, smile, or continuing the play by cracking another joke (Norrick, 1993), and a lack of laughter, smiles or comments is treated as negative evidence. In reality, however, things can be

more complicated when social and interpersonal considerations are taken into account. For instance, laughter may not necessarily provide strong positive evidence that the humor is grounded successfully as it could be social laughter, which occurs as a response to others laughing or the group's expectation of laughter (Provine, 1992) or a behavioral product of emotional contagion (Hatfield, Cacioppo, & Rapson, 1992).

Additionally, unlike other types of communication, the acceptance phase for humor requires successful grounding at all of the following three levels: recognizing the humorous frame, understanding the humor, and appreciating the humor (Hay, 2001). "Understanding entails recognition, and appreciation entails both recognition and understanding" (Hay, 2001, p.67). Consider a negative comment of "not funny" on an attempted joke. This can be taken as positive evidence that the recipient has understood the humor as intended (to amuse) but did not appreciate it. That is, with such evidence, communicators can reach closure regarding recognizing and understanding the humor (the first two levels); but upon this closure, the recipient initiates a new contribution evaluating the funniness of the humor.

In this section, I discuss the relationship between common ground and humor through reviewing important humor theories and the interactional challenges specific to humor communication.

### **Common ground and humor**

Many prevailing psychological and linguistic theories of humor (e.g., Attardo & Raskin, 1991; Norrick, 1986; Wyer & Collins, 1992) involve the concept of *schema or script*, suggesting that humor is elicited when two different schemas or scripts are simultaneously activated in the recipient and that the schemas or scripts are opposite in a special sense (Raskin, 1985; Wyer & Collins, 1992). "Schema" is defined by cognitive psychologists as a mental representation of preconceived ideas or a mental model of some aspects of the world (Bartlett, 1932; Edwards &

Middleton, 1987; Mandler, 1979; Schank & Abelson, 1977, 2013), and that “is formed on the basis of past experience with objects, scenes, or events and consists of a set of (usually unconscious) expectations about what things look like and/or the order in which they occur” (Mandler, 1980, p.263). A script is a particular type of schema relating to knowledge about routine activities such as ordering in restaurants (Schank & Abelson, 2013).

Flamson and Barrett (2008) empirically tested the role of prior knowledge of the scripts in humor appreciation. In two experiments, each displaying one of the two types of humor (narrative-style jokes and photo-caption jokes), they assessed participants’ possession of prior knowledge of an important piece of information (script) required to get the humor and manipulated the level of encryption of the information in the humor (high encryption: the information was not provided; low encryption: the information was made explicit). Results suggested a significant main effect of individuals’ prior knowledge on finding the humor funny. As an example, knowing that the architect Frank Gehry is famous for his unevenly shaped buildings was key to finding the photo (sandwiches were positioned unevenly)-and-caption (“Frank Gehry no longer allowed to make sandwiches for grandkids”) funny. Additionally, those who possessed prior knowledge found it less funny when the important information was made explicit, whereas those who did not have prior knowledge came to find it funny when it’s made explicit than when it’s implicit.

Through the lens of conversational grounding, the scripts associated with the humorous text must be mutually shared as common ground as a premise for the humor to be grounded effectively. The humor producer is likely to presuppose that the recipient shares the same script when/or prior to initiating the humor. However, the cognitive theories of humor generally lack considerations of social contexts in theorizing about cognitive aspects of humor (Martin, 2007) as

to provide answers to whether and how humor producers perceive their target audience with respect to their possession of key scripts (knowledge).

On the other hand, social psychological and sociological approaches to humor have focused on the social functions such as negotiating social boundaries (e.g., Fine & de Soucey, 2005; Holmes & Marra, 2002; Martineau, 1972; Meyer, 2000) and identities (e.g., Boxer and Cortés-Conde, 1997; Bucholtz et al., 2011), and social consequences of humor such as increased interpersonal attraction (e.g., Cann et al., 1997; Kane, et al., 1977) and ingroup cohesion (e.g., Robinson & Smith-Lovin, 2001; Ziv, 1984). These social functions and consequences of humor were discussed independent of the cognitive mechanisms underlying how humor works to perform such functions. Generally, there is a lack of communication between cognitive and social aspects of humor both theoretically and empirically. One exception is Katz et al. (2004) who empirically tested the role of shared knowledge (among other interpersonal factors) in processing sarcastic humor.

Overall, it seems obvious that the script, schema, and knowledge that these psychological and linguistic theories of humor concern, must be in the speaker and the listener's common ground for the humor to take effect. Flamson and Barrett (2008)'s study provided further evidence that listeners do need to possess the script, schema and knowledge to understand and appreciate the humor. It remains unclear whether and how the speaker presupposes the potential audience's knowledge when producing the humor.

### **Interactional challenges in grounding humor**

In most conversational contexts, when the listener fails to ground a message, it is generally preferable to request clarification as soon as possible to avoid further misunderstandings and grounding failures. The requester will not usually be judged or viewed negatively (Sacks et al., 1974). In the case of humor, however, individuals may be motivated to conceal their inability to

make sense of the humor, because unlike in non-humor situations, asking for clarification of humor is not construed neutrally but as “unsophisticated” (Bell, 2013) and poses face threats to both the speaker and the hearer (Zajdman, 1995, p.332). In effect, many humor theorists have argued that humor poses an understanding test to the audience, a test “important to pass in order to maintain face” (Sacks, 1974, p.346), especially when the knowledge involved in the humor is such that the recipient is expected to understand and/or is an important part of the recipient’s identity (Bell, 2013). For instance, understanding dirty jokes might be important for teenage boys (Sacks, 1974), and understanding science-related humor might be important to those who envisioned themselves as future scientists (Bucholtz et al., 2011).

By requesting clarification of humor, the recipient fails the understanding test and might be judged for their lack of potentially important knowledge. Therefore, instead of actually grounding the humorous message, humor recipients may choose to “ground” it for their current purpose, that is, to pass the knowledge test. And it is easy for them to do so – produce laughter “at the recognized completion” (Sacks, 1974, p.345), because laughter is generally viewed as the second pair part of an adjacency pair of humor-laughter (Norrick, 1993, 2003), and a general way available to appropriately respond to humor whether one understands or not (Sacks, 1974). In fact, Bell (2009) examined responses to failed humor (elicited by participants telling the same incomprehensible joke to their social encounters) and found that laughter was the most common response. She also found a pattern that negative reactions were more common among intimates whereas neutral reactions and rapport were preferred by acquaintances and strangers.

Individuals may also choose to ground a humorous message at the level of recognition (convey that they recognize the message as intended to be humorous), and feign a lack of appreciation by shifting the fault to the teller as a defensive action (Sacks, 1974), when in fact they

lacked comprehension (Bell, 2013). For instance, Bell (2013) collected responses to a joke designed to be incomprehensible without an explanation. Almost half of the responses (such as “you’re hilarious”, “haha, that was kind of lame”) feigned a lack of appreciation. This pattern was found to be common for men (Kotthoff, 2000, 2006) and for humor perceived to be challenging and aggressive (Bell, 2013; Hay, 2000).

These factors and considerations with respect to social, interpersonal dynamics, impression management and face maintenance needs, further complicate and pose great challenges to the grounding of humorous messages and conversations. To the extent that any of the aforementioned factors were involved, we might expect that the interactive feedback may not genuinely reflect the actual status of common ground.

### **Humor in intercultural interactions**

While there is extensive research on humor between and among individuals who share the same linguistic and cultural background at various levels (e.g., philosophical, sociological, psychological levels), in various settings (e.g., organizational (e.g. Cooper, 2008; Lynch, 2010; Tremblay, 2017), pedagogical (e.g., Garner, 2006), conjugal (e.g., Ziv & Gadish, 1989), etc.), research on humorous interactions across cultural and linguistic boundaries remains scarce. In addition to the scarcity, the investigations into intercultural humor have been mainly case studies of conversation analyses of a few selected conversation excerpts and interviews with the corresponding interactants, mostly focusing on the linguistic features of the content of humor. Findings from these studies, insightful as they are, can hardly speak beyond the very interaction analyzed. Additionally, they have taken place in a number of different settings, locations, and with participants of different types of relationships, with each conducted in their own right, making it hard to synthesize and derive consistent conclusions from the findings. To date, intercultural

humor research centers around three issues: whether NNS are capable of getting NS humor, whether NNS are marginalized in intercultural humor, and whether there are significant interactional problems that pose great challenges for NS-NNS humorous communication.

### **NNS ability to get NS humor**

Among the limited number of studies that look at whether NNS are capable of getting NS humor, there is still disagreement. Using a diary study with 6 advanced-level NNS and focus group interviews where participants interpreted and discussed their experiences of humor with NS, Bell and Attardo (2010) developed a typology of interculturally failed humor and identified 7 linguistic levels at which humor could fail between intercultural interlocutors. This typology reveals that in terms of understanding and appreciating humor in English, “NNS don’t fail differently (from NS), they just fail more” (p.441). The authors also acknowledged that level 2 failure (semantic understanding of words and their connotations) is a failure more specific to NNS. This is in line with the finding that lack of vocabulary is the primary difficulty hindering NNS listening comprehension in multilingual conversations (Cao et al., 2016) and in informal communication (Yuan et al., 2013). Nevertheless, saying that humor could fail for NNS at any of the locutionary, semantic or pragmatic levels just as it could fail for NS is not informative as to why do NNS fail more.

Drawing on Hay (2001)’s distinctions of humor recognition, understanding and appreciation, Bell (2007b) argued that lack of understanding at the semantic level need not preclude appreciation of humor, and that understanding and appreciation can be achieved at varying degrees. Her case study of one female NNS indicates that the NNS gave a hearty laughter even though she admitted that she did not fully understand the humor between two NSs and was not familiar with the script required to understand the humor. Bell (2007b) interpreted the laughter as an indication of humor appreciation. However, it might really just be social laughter (Provine,

1992) or a behavioral product of emotional contagion (Hatfield, Cacioppo, & Rapson, 1992), neither of which is uncommon in social interactions, and neither of which is reliable evidence of understanding or appreciating the humor itself.

### **Are NNS marginalized in intercultural humor?**

Research is also inconsistent regarding whether NNS are and feel marginalized in intercultural humor. Davies (2003)'s work suggests that even beginning level NNS could achieve a certain level of both interpretive and productive competence with regard to humor. She did a discourse analysis of the conversations of three extra-class groups where several NNS of varying L1 backgrounds practiced English through talking to one NS. Davies (2003) found that NNS are capable of constructing humor with the support and collaboration from NS, and of showing understanding by playing within the humorous frame set out by NS. In the pedagogical setting where the primary goal of interaction is to build up NNS language ability, supportive and accommodative behaviors might be prevalent. Findings from this study may not be generalizable to the humorous interactions between NS and NNS in other settings such as the workplace (e.g. multicultural teams), where both parties take on the roles of equal participants instead of learner versus supporter.

In a non-pedagogical setting, Cheng (2003)'s analysis of three extracts of the conversations between intercultural dyads also demonstrated that in various settings such as restaurants, cafes, clubs and participant's home, Hong Kong Chinese NNS equally participated in and responded appropriately to conversational joking, refuting the notion that NNS are undesirably positioned and marginalized in intercultural interactions due to their lack of or limited access to cultural and linguistic resources (Adelsward & Oberg, 1998). Findings from this study should also be interpreted with caution, since the site of investigation (host culture) -- Hong Kong, where the dominant language is not English -- might affect the dynamics of NS vs. NNS interaction. For

instance, the humor extracts in the study involve many cultural references in the host culture (e.g. Premier Zhou) and vocabulary in the host language (e.g. Cantonese), which puts NNS at an advantage, a situation uncommon for NNS in English-speaking countries. Additionally, with greater intercultural experience interacting with NNS, as well as being expatriates themselves and nonnative speakers of the host language, NS's expectation of the Hong Kong Chinese NNS's access to the cultural and linguistic resources in English and English-speaking countries could be more realistic, and thus might make proper adjustment when using humor with NNS. For research taking place in the US, the content and form of humor could orient towards US culture and language and thus shift the dynamics between NS who are more familiar and NNS who are less familiar with the culture and language. In effect, contrasting Cheng (2003)'s findings, Bell (2006)'s case study of one female NNS (Thai native studying in the US)'s conversations with NSs in various settings and her reflections suggest that the NNS did get marginalized in playful interactions, as a result of NS's underestimation of her competence in constructing and understanding humor. Specifically, the NNS's initiations of humor are often ignored and not responded to by her NS interlocutors, and that NS tend to make excessively explicit framing of humor assuming that the NNS might not easily recognize and get the humor. Even though individual characteristics such as personality, language proficiency, etc. might account for the disagreement in the findings, it is conceivable that the site of investigation plays a key role in whether NNS be/feel marginalized in humorous interactions with NS.

### **Interactional difficulties in intercultural humor**

Research suggests that interactional difficulties in humorous interactions present no issue for NS and NNS as they would both develop accommodation strategies in constructing and interpreting messages to overcome differences and avoid miscommunication. For instance, Bell (2007a)'s analysis of 3 young female NNS's humorous interactions with NS and their reflections

suggested that both parties avoided potentially dangerous forms of humor, taboo or controversial topics, or made efforts to carefully contextualize it if used. Both parties were also lenient in interpreting unintended “insults” by laughing it away. Moalla (2015) reported similar findings based on her analysis of the natural conversations between 1 American (NS) and 3 Tunisian (NNS) females, as well as interviews with 2 other American and 2 Tunisian females. She found that NS Americans would think ahead and be ready to adjust linguistically and culturally by providing clear explanations and contextualization cues, by avoiding culturally-dependent humor and biting forms of humor such as teasing and sarcasm.

Both studies suggest that NS are aware of the limited common ground shared with NNS, such that they would avoid using references and vocabulary deemed unfamiliar to NNS, or provide explanations after using them. It is worth noting that both studies analyzed conversations between/among cross-cultural participants who already have well-established interpersonal relationships (e.g. boyfriend-girlfriend). This could affect the humorous interaction in that interactants are likely to share greater common ground such that they know what each other doesn't know and would avoid referring to what the other person is unfamiliar with in their humor. Additionally, in many of the excerpts and examples in these studies, NNS outnumber NS participants, which likely affects the interactional dynamic. For instance, humor attempted for the group of 1 American female and 3 Tunisians (as in the case of Moalla (2015)) is conceivably more adapted to what the Tunisians are more familiar with than vice versa. Another factor that might have made the NS to make adjustments is their intercultural experience. At least in Moalla (2015)'s study, the American participants “had frequent interactions with Tunisian learners of English as they participated in a study abroad program in Tunisia”. There is little basis to infer that NS with

little intercultural experience will make similar interactional adjustments with NNS in their humor out of an awareness of the limited common ground.

Overall, current research provides no conclusive answer as to what are some distinctive difficulties for NNS to get NS humor that cause humor to fail more for NNS, and what are some interactional challenges of humorous communication in multilingual multicultural contexts.

# Chapter 3: Study 1: Understanding the Challenges of Sharing a Laugh With the Americans – A NNS Perspective<sup>1</sup>

To date, research provides no conclusive answer as to what distinctive difficulties NNS experience when trying to understand NS humor, difficulties that cause humor to fail more for NNS, how these difficulties are weighed differently for NNS, and whether there are interactional challenges for NNS to ground the humorous message in conversations with NS. This is because the findings from existing studies of intercultural humor (e.g., Bell, 2006, 2007a, 2007b; Cheng, 2003), which are predominantly conversation/discourse analyses, cannot extend beyond the specific conversation excerpts studied, and the specific relationships between the interactants and contexts in which the conversations took place.

In response, the goal of the first study of my dissertation is to develop a deeper and more comprehensive understanding of NNS's experience of interculturally failed humor through in-depth interviews. My goal is to identify the difficulties both in understanding the NS humor and in grounding humorous messages through interactions, that are common for NNS across different intercultural contexts and interactants' relationships. Two research questions drove the investigation:

**RQ1:** What are some perceived sources of confusion in conversational humor with native English speakers from the US encountered by nonnative English speakers from East Asia?

**RQ2:** What are some interactional challenges for nonnative speakers in dealing with interculturally failed humor?

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<sup>1</sup> Parts of this chapter were derived from a previous publication (Duan & Fussell, 2021).

## **Method**

To investigate these research questions, I conducted in-depth semi-structured interviews with 28 nonnative English speakers born and raised in East Asia, who were studying or working at Cornell University. The interviews were all conducted in-person and took place between March 2018 to November 2019.

## **Participants**

Participants were recruited through an internal online participant recruitment system and were given either 1 extra credit or \$5 USD compensation per half hour of their time. I set the following screening criteria: participants must a) speak English as a nonnative language, b) be born and raised in an East Asian culture, c) have lived in an English-speaking country for less than five years. I focused on a sample of East Asians because: 1) they account for the largest proportion (70% as of 2018) of international students at the university; 2) East Asian languages are significantly different from most Western languages of the Indo-European family and East Asians do not share the same historical and cultural traditions that Western humor might draw on (Brennan, 2001); 3) East Asians are traditionally viewed by Westerners as lacking a sense of humor (Chen & Martin, 2007; Yue et al., 2016) and East Asian cultures do not value humor as a positive personality trait as much as Western cultures do (Jiang et al., 2011, 2019; Yue et al., 2016). Criterion c) was applied to mitigate the level of acculturation after long exposure to American culture.

The participants (18 women, 10 men) were from China (16), South Korea (7), Vietnam (3) and Japan (2), and were studying or working in various fields such as computer science, communication, human ecology, information science, engineering, economics, statistics, math, environment, and hotel management. Twenty-two were undergraduate students, four were master

students, and two were doctoral students. They had lived in an English-speaking country for 3 months to 4.5 years. Their age ranges from 19 to 26 years old. The majority (16) had work experience in a research lab, five had interned at a company, five had worked in a student organization, and almost all had had group projects collaboration experience.

### **Procedure**

I took advantage of the fact that all the participants volunteered to participate in this study (among a pool of other studies available to them) to be asked about their experience of humor with native speakers (as was advertised). Upon completion of study introduction and obtaining signature for informed consent, I opened the interviews with an elicitation of an account of such experience of intercultural humor that may have come to mind when they made the decision to participate. Then I asked participants to briefly describe any team, research lab, or organization they were part of, worked at or interned at, provide scenarios where humor happened in different settings (e.g. attending a lab meeting, working individually in a shared space, collaborating, engaging in casual talk) within different teams, and recall the content of the humor. If they did not understand the humor, I asked what conversation topic led to the humor and how the conversation unfolded following the humor, how they figured out it was intended to be funny, and whether and how not understanding the humor affected their ability to follow the overall conversation. Through answering these questions, even if the participants could not recall the exact content of the humor they didn't understand, their elaboration provided a rough account of the humor and could help them reason about what prevented them from understanding it (the perceived sources of confusion). Finally, I asked them to recall their reactions and feelings when they did not understand the humor and/or find it funny, and how their reactions and feelings differed across the different scenarios they had described (e.g. with a different group of people, in a different setting, in their native language). Each interview lasted for 1-2 hours.

## **Analysis**

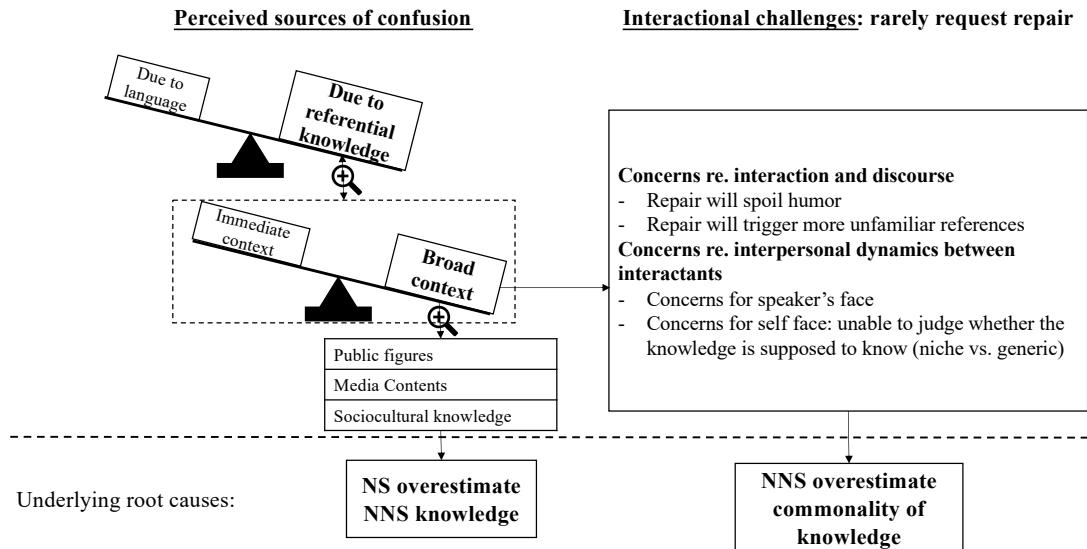
All the interviews were conducted in English. Although some of them could have been conducted in Chinese (the common native language between myself and most of the participants), I conducted all the interviews in English to treat all participants in the same way. All the interviews were audio-recorded and transcribed by myself within a few days upon completion of each interview. During transcription, relevant prosodic information (e.g., laughter, hesitation, whisper) was marked, but speech disfluencies (e.g. false starts, stutters) were removed from the excerpts for ease of reading.

The transcripts were coded using ATLAS.ti, a software commonly used for qualitative data analysis (Hwang, 2008). At the open coding stage, I exhausted the data and developed an initial set of codes. I took actions to explore boundaries of the codes by paying attention to and actively looking for discrepant data (Maxwell, 1996). Through iterative coding and interviewing, initial codes were emerged, broken down, or modified by identification of alternative interpretations and cases that didn't fit (Glaser, 1978; Maxwell, 1996). A total of 159 codes and 826 quotes were finalized during the open coding stage. I grouped part of the codes around the two research questions: perceived sources of confusion in humorous interactions and perceived interactional challenges in dealing with interculturally failed humor. Then I further iterated between grouping similar codes, examining quotes in their context, and uncovering the connections among the constructs and piecing out a framework.

## **Findings**

In this chapter, I first present details of the surface-level sources of confusion perceived by NNS that were divided into 1) language-related sources of confusion, which were downplayed by NNS, and 2) confusions due to lack of referential knowledge, which were identified by NNS as

the predominant source. Then I further developed a typology of the genres of referential knowledge that the reported NS humor had drawn on, with frequencies of mentioning by the number of NNS. At the end of the first section, I uncover the potential cause for why humor might fail more interculturally following the series of analysis. In the second section, I divided the perceived interactional challenges into that related to the interaction and discourse itself, and that related to the interpersonal dynamics between the humor interactants. A summary of the findings can be found in a visualized diagram in Figure 1.



**Figure 1. Summary and Visualization of Findings of Study 1.**

My data revealed that there was a misalignment of both NNS and NS assumptions about one another's knowledge, which likely accounts for both the causes of and the interactional challenges from interculturally failed humor. First, NNS perceived NS's overestimation of their cultural and linguistic knowledge to be the underlying cause of many surface-level sources of confusion. Second, NNS's inability to assess the commonality of the knowledge required to get NS humor poses interactional challenges for them to properly ground humorous messages initiated by NS.

The source of the quotes is indicated by participant ID, abbreviations of home country (China=CN, Japan = JP, South Korea = KR, and Vietnam = VN) and gender (F=female, M=male). If applicable, some was followed by | a brief description of the setting in which the reported humor occurred. For example, {P6 CN F | office of the college news editorial board}. Within a quote, text in parentheses indicates my own annotation or clarification, text in square brackets indicates what I said during the interview.

### **Perceived sources of confusion**

I initially categorized NNS perceived sources of confusion of NS humor into humor that failed due to language-related issues and humor that failed due to a lack of referential knowledge. My data suggested that the latter source of confusion accounted for a much greater proportion of the failed humor reported by NNS. Further analysis of the latter source revealed that the referential humor drawing on participants' immediate context rarely fails while humor drawing on the broader sociocultural context, such as references to popular culture, often does. This series of investigations allowed me to uncover a potential cause that might account for why humor often fails interculturally to begin with – that NS might have overestimated NNS knowledge.

#### ***Language-related sources of confusion***

Language-related issues include the fast pace of humor delivery, difficulties in understanding the meanings and connotations of words, the degree of vulgarity, the language used by subcultures, and puns. I discuss each of these in more detail below.

**Fast pace.** Thirteen out of the 28 NNS participants mentioned that the fast pace at which the NS spoke when joking exacerbated the difficulty of understanding NS humor. Understandably, research (e.g., Vaid et al., 2015) has found that even NS comprehension can be delayed significantly when processing humor than non-humor, especially in circumstances when they don't

expect humor to occur. For NNS, to follow non-humor conversations with NS at a normal pace already poses a great challenge (Takano & Noda, 1993); it can be all the more challenging for NNS to process conversational humor, the success of which, to some extent, hinges on the speaker's ability to deliver the punchline before the listener can fully process the meanings and in some cases resolve the incongruity (e.g., Wyer & Collins, 2004). As P16 admitted,

*In the case of humor, the person speaks really fast, faster than I could process the meanings. {P16 JP M}*

NNS participants reasoned in the interviews that talking a bit more quickly is necessary to achieve the humorous effect. If the speaker grants the listener enough time to make sense of the message, the humor is no longer funny. The faster speech rate is justified as an essential characteristic that distinguishes it from non-humor discourse.

*The appeal of telling something really interesting especially joke is that you need to put some twist that is supposed to be surprising. So people will try to speak a bit faster, otherwise it's predictable it won't be funny. {P28 CN F}*

Some NNS explicitly associated the fast-paced nature of humor delivery to wit and intellect.

*I think humor has to be quick. You have to say it before everyone figures out your punchline and surprise them. It's a sign of intellect. {P11 Japan M}*

It's worth noting that NNS perception of a faster pace may not correspond to an actually faster speech rate at which NS spoke, as research suggests that conversational humor is not marked by significantly different speech rates (Attardo et al., 2011). Rather, the perception might have to do with the delay in comprehension (Vaid et al., 2015), and with NNSs' unfamiliarity with the words and the referential knowledge.

**Meanings and connotations of words.** Bell and Attardo (2010) identified the failure to understand the meaning of words and their connotations as a humor failure specific to NNS. My study reveals that when NNSs report they didn't understand the meaning (denotation) of a word critical to understanding the humor, it is almost always referential. For instance, words referring to certain food (e.g., tater tots (P22)), sports (e.g., lacrosse (P13)), political concepts (e.g., Senator (P27)), etc., which are categorized as “referential knowledge” and will be discussed in subsequent sections. In fact, understanding the literal meaning of words doesn't seem to be a major obstacle for NNS in getting NS humor. Rather, when pointing out words as a source of confusion, NNS emphasized that it is the connotation of the word rather than the literal meaning that prevents them from recognizing the humorous frame and/or getting the humor. P1 recalled an instance in which a female acquaintance commented on the food and the service of the restaurant that the three of them (P1, the female acquaintance and one other American guy) dined in. P1 figured the comment was “supposed to be funny because the other American smirked and agreed” but he couldn't be sure about the commentator's attitude.

*After that (dinner), she said, the food taste so shitty and the waitress so sassy. For a long time I couldn't get a sense of what is sassy. I've seen it used in good ways and bad ways. It's so subtle. It might entail many feelings. So I had many assumptions in my mind but I said nothing because I don't know how to handle it. I'm a little afraid to offend her if I ask “what do you mean by sassy?” She might think I disagree with her. {P1 CN M}*

Aside from the positivity/negativity of word connotations, normative gender associations of certain words can be confusing for NNS in humorous contexts, too. One NNS recalled a situation in which the humorous effect was intended when the NS used gender swapped adjectives

to tease someone. Not knowing what gender connotation the adjective has in the first place, he couldn't identify the humorous frame at the time.

*They were teasing him like calling him beautiful or cute. Those gender descriptions I didn't get what's wrong with it. In my native language, beautiful and handsome mean the same. {P11 Japan M}*

**Degree of vulgarity.** Among the sources of confusion caused by not knowing the connotation, the most frequently mentioned is vulgar words, where the amusing effect lies in the vulgarity of the expression. Even if NNSs realize that certain words have negative and even vulgar connotations, the degree of obscenity and offensiveness can be difficult to gauge, as the following quote illustrates:

*The subtle part is the dirty words. If it's in Chinese, we know where the line is. We cannot cross that line. You can make fun of some people and use whatever word marginally acceptable in Chinese, not too mean. In English we don't know where the line is. I've heard Americans say (looked at his phone where he took note of the curse words he had heard) douchebag or dumbass or f-word b-word. I don't know if they are too uneducated to bring up decent words or simply say it to make fool of themselves. I don't have a good sense in terms of that. So in those situations I would feel very uncomfortable and just smile awkwardly.*  
*{P1 CN M}*

Similarly, P9 recalled that at a party, some undergraduate guys used a lewd slang term “ligma” in what Francis (1994) would call “put-down humor” to disparage the outgroup

(University Y) in order to induce a sense of triumph over them and create solidarity and bonding among in-group members (students of University C).

*At the party some frat guys were drunk, and others are tipsy and then they were like “[University Y] has my ligma” blah... they tried to put [University C] in a high position than [University Y] and they make people laugh and feel like [University Y] is inferior to us... the first time I heard this slang “ligma”, of course I didn’t understand. I probably Googled it and then I was like oh this is very inappropriate, it’s not polite especially to girls. But after you get used to the environment and understand it’s just a normal slang people my generation use. But still, I don’t know how insulting that word sounds to other people. {P9 CN F}*

**Informal language used by subcultures.** The above slang term may be unfamiliar even for some Americans. Slang terms like the above also exemplify the last category of language-related sources of confusion: informal language used by or originated from a specific population or subculture, to use some NNS participants’ own words, “non-standard English” (P19), or language that “can be only looked up in urban dictionary” (P14). P12 recalled her American friends repeatedly using the word “sus” in humor contexts. She had to look it up to study the background of its proliferation to be able to understand why they might find it amusing.

*(for example,) “sus”? like someone is sus, is suspicious. It’s from the game (Among Us) they play. I didn’t find it that funny maybe (because) I didn’t play that game. {P12 VN F}*

Similarly, P19 recalled that in a casual catch-up, an American friend of his used a slang term that was very popular when the conversation took place. He laughed along with them without

understanding what was funny. He wasn't so curious to look it up until the second time he encountered the same word with a different group of friends.

*He said I yeeted the ball from the halfway line. I think the funny was “yeet”.*

*But I didn't get it because the way it's used is a verb like throw. I literally thought it means throw and I thought what's so funny about it. But it's the sound you make when you're excited when making a shot, like a [exclamation]. Yes. Also it's not standardized English. It's from Vine or something. {P19 VN M}*

Most examples of this type are slang terms and abbreviations that originate from a specific online community (e.g. game community where “ligma” and “sus” originate), and that have gone viral on the Internet through highly-circulated memes. Some NNS also mentioned the language used by certain offline communities based on geographical regions, such as dialect (P11), spoken by certain demographics, such as ghetto talk (P22), as a hurdle for them in understanding American humor.

**Puns.** Another source of confusion that appears to be related to language, namely puns, often fails for NNS due to their lack of referential (and often culture-specific) knowledge. It's worth nothing that Attardo and colleagues (1994) defined referential humor to be “based exclusively on the meanings of the text and that does not make any reference to the phonological realization of the text”, and verbal humor as humor that “makes reference to the phonological realization in addition to being based on the meaning of the text's elements” (p.95). This dichotomy equates all verbal humor to punning, and all referential humor to non-punning. This definition does not serve my purpose to capture NNS perceived obstacles in understanding NS humor, as a majority of the humor failures reported to be related to punning are in effect due to lack of referential knowledge. Therefore, for my purpose, I redefine referential humor as humor

that requires the knowledge of certain (often cultural) references. The following quote provides a glimpse into how referential humor under my definition can take the form of puns.

*I do have limitations in understanding all the puns because they might reference to a show, or to the 1990s something like a pop singer. So if they reference, humor seems to be a big limitation for me to understand, because I basically don't know anything about what they refer to. {P5 KR F}*

In fact, many (13/28) NNS reported that humor based on pure wordplay is easier to get than if it contains cultural references such as public figures, sports, politics, etc. As the following quote demonstrates:

*For puns, most times I get it, unless that is another politics related pun, which is beyond the meaning of the words, you have another politics thing to understand. But if it's just simple like word play, I get it most of the time... I remember once an American friend made a joke saying "Trump will bring his own pens". I didn't get that back then. Until recently I realized that's the vice president's name (Mike Pence). I didn't know who's the vice president. I'm not into politics. {P6 CN F}*

Humor that failed purely due to language-related issues only accounted for a small proportion of the failed humor recalled and reported by NNS, as compared to the humor that draws on referential knowledge.

### ***Referential humor***

I identified two types of referential humor, one type that draws on the immediate context (or category membership in Schegloff (1972)'s term) the interlocutors share (e.g., taking the same

class, working in the same lab or office, knowing a mutual friend, studying the same major, being Cornell students, etc.). The other type that draws on the broader American context external to the immediate context (which will be discussed further in the next section). Interestingly, many NNS participants brought up the humor that draws on the immediate context as examples of the humor that they can get, to contrast the latter type that draws on the broad American context which they don't get. As the following quote illustrates,

*I can understand when their jokes are directly related to the coursework or related to joking about the professor as opposed to humor that's external to the context, like some pop singer or TV show. {P21 CN F}*

This pattern is reported for intercultural encounters who are just acquaintances as well as those who maintain very close relationships. In other words, my data suggests that even acquaintances are aware of the shared immediate context or lack thereof, such that NS would avoid the kind of humor that draws on the immediate context they know the audience don't share. On the other hand, even close friends may not be aware of whether the broad context is shared.

I use two examples provided by P23 of an acquaintance of his, an American “Mechie guy”, to demonstrate that NS are aware of the immediate context and the immediate category membership (un)shared with their audience, which was reflected in the referential humor they used with different groups of people.

P23 reported that he was once teamed up with three other students of various majors to work on a group project for an information science class. He reported that other than the humor that draws on the broad American context (e.g., pop culture), the humor happened within this group was limited to the particular class that all the members can relate to, because they gradually realized they shared limited common ground despite all being Cornell students.

*There is laughter (besides pop culture) but the laughter is really limited to the course, or the workload in general, like crying in the library, things that all C students can all relate... The other thing is we are from diverse backgrounds so it's hard to find a topic everyone is familiar with, except for this very class that we're all taking... I think at the very beginning the Mech E guy mentioned one of the dorm buildings on campus that none of us know. I guess that just shows how diverse we are, even though we're all Cornell students. {P23-CN-M | group project with 2 AM M, 1 CN F}*

Over the course of the interaction, interlocutors become aware of the immediate context that they do or do not share. In this case, the shared immediate context is that they are taking the same course. Some further interactions initiated by the “Mech E guy” suggested that even the shared identity of being Cornell students might be external to the immediate context, since there is knowledge about the university that they don’t share. This seems to be consistent with previous findings (such as Isaacs & Clark, 1987) that the interactive feedback from the addressee can lead to modifications of the speaker’s prior beliefs about the addressee’s category membership, along with what knowledge people of that category may possess.

Humor often functions to negotiate social boundaries (Meyer, 1997, 2000) that distinguish the group from others through creating shared collective identity (Fine & De Soucey, 2005). The content of humor often draws on topics that the “joking relationships” share common ground about (Apte, 1985; Raskin, 2008). To further demonstrate this, I present another example the same participant (P23) gave, in which the American “Mech E” guy on his class project team whose humor was limited to course-related topics during their class project meetings, nevertheless often shared “Mech E” jokes with a group of Mech Es.

*This Mech E guy's actually very funny. I happen to join an engineering club with him. I'm not a Mech E but in this club they make a lot of Mech E jokes. I remember it's about a software they use called Assets. It's basically when you design a physical 3D printing part, you can apply pressure and see how much pressure it can take and you can see the color diagram. Red is at this particular point it's taking a lot of force or pressure. And you can see if this thing is gonna break, and then around that they just say things that are funny. Most of it I can get since I'm also learning that.* {P23-CN-M}

Similar examples were found for major/expertise-based inside jokes. P28 recalled that in her computer science project group, a NS used

*a piece of code, like an endless loop to represent something or explain a phenomenon, that was funny for us but it would make no sense to someone who knows nothing about programming.* " {P28 CN F}

The category membership based on major, expertise, as well as the limited shared experience of taking the same class, for example, serve as cues indicative of what interlocutors mutually know (or not know), and are made use of by NS to crack amusing remarks with the right audience, to include the listeners as ingroups. According to NNS accounts, NS humor drawing the immediate context can be quite effective.

When there is not much shared immediate context, NS humor might tend to draw on a broader American context, conceivably to reach a diverse audience, who don't share the same small category membership, but at least are presumed to be members of a broader social category. This is when humor becomes difficult for NNS.

Even for intercultural encounters who have established intimate or working relationships and who share a long history of interactions, it may not be obvious for NS that NNS may not share the broad American context their humor bases on.

For instance, P6, who has been working as an editorial member of the college daily for almost a year, said she had no problem getting her colleagues' humor that draws on the immediate context – shared experience of reviewing poorly written articles.

*When people see a terrible article they make fun of it, almost every time.  
If it's that kind of situation, we all know how to react to that kind of humor. And there's some long running jokes that we all know... because we have a lot of interesting quotes on the walls of our office and we all know that when some situations come up we just quote those quotes by some alumni, that would be appropriate for the situation that's funny." {P6 CNF | office of the college news editorial board}*

When asked whether she has had experience not getting the humor in her workplace (the editorial room), she responded:

*Oh a lot of times, I think it's mostly politics related. They are using some political figures to make fun of the situation. I just don't know those (political figures). I think most people get it. A lot of times it's just me (who didn't get). It's pretty awkward. Because when you work for news, people talk about news. And there's something you just don't know being an international student. {P6 CNF}*

As another example, P5 described having a group of American friends from her drama club, with whom she maintained very close relationships. They shared so many intimate experiences,

memories and inside jokes. However, when it comes to humor drawing on the broad American context, she would still feel frustrated when “it’s referring to some TV shows or commercials they grew up watching”. She felt that,

*they sometimes forget that I grew up in a different country and I wasn’t exposed to what they have been exposed to growing up in the US. {P5 KR F}*

The fluidity of communication, the intimate memories they collectively experienced, and the inside jokes may have made the American friends view her as one of them (an ingroup in intimate terms) and misperceived her as a cultural ingroup in broad terms.

#### **Genres of the referential knowledge drawing on broad American context.**

Since most of the failed humor examples reported by NNS participants involve referential knowledge of the broad American context, I further developed a typology of the genres of referential knowledge that the reported NS humor had drawn on, with frequencies of mentioning by the number of NNS, as summarized in Table 1.

Genres	Sub-genres
<b>public figures (28/28)</b>	Politicians (19), historical figures (2), other public figures (3) Popular culture: Musicians (15), actors/actresses (8), sports athletes (7), TV personalities (4), social media influencers (2)
<b>media contents (17/28)</b>	Movies (12), TV shows (10), memes (5), TikTok (3), Vine (2) Commercials (8), News (5), Twitter activities or trends (2)
<b>sociocultural knowledge and collective experience (9/28)</b>	Longstanding sociocultural facts, objects & concepts: cultural traditions (3), facts & stereotypes about states (3), food (3), brands (2), system (2) Collective experience (past): entertainment (8), food (3), brands (2), policies (2)

Table 1. Genres of the underlying referential knowledge eluding NNS

**Public figures.** All NNS participants mentioned public figures as the main type of referential knowledge frequently used in NS in their humor and that frequently eluded them. Many

of them couldn't recall or identify the specific name of the public figure. But they could infer the person's profession based on the context. A majority of the public figures mentioned are politicians or entertainment professionals.

*(The humor that I don't get is) mostly politics-related. They use some political figure to make fun of the situation. I just thought, who is this person? What happened with that guy? One that I remember is this February, the Dean of the X College resigned without telling anyone why. There were seven or eight people in the room. And then one of our editors made a joke comparing the Dean to one of the political people, many people laughed, some didn't. I was one of the ones that didn't, because I just don't know what's going on. I mean I kind of know because they are doing the analogy. I know what happened to the Dean. But, I just didn't find it as funny as maybe as someone else who know the story of the politician. {P6 CNF | editorial board meeting, 7-8 colleagues}*

*They like to joke about a specific politician. They'll say some acronym (pun) or any words that have the same pronunciation that remind them of that specific person I just don't know. But they feel that is so funny. {P7 CNF}*

NNS reported that they don't even have the basic background knowledge of the political system in the US (e.g., political parties, positions), not to mention the specific public figure's political leaning and position, to be able to understand the political humor.

*I have an impression that they always make jokes about their president or congressman or senator or whatever, I can't tell the difference except for the president. They (the positions) don't have meanings for me... It was about some*

*Senator at North Carolina. I don't even know where that is on the map you know.*

{P26 CN F}

*The professor's friend was trying to vote for a government position at this place. And basically they are annoyed at each other. I don't know if they belong to domestic (Democrat) or Republican but it's one of them. People I hear, Americans I assume, they know that person first of all and then some of the stuff that person did, is part of their life. So many of them laughed. {P17 CN F | professor's humor in classroom}*

Another major subcategory of public figures pertains to popular culture. Almost all (26/28) NNS participants have mentioned at least one instance of musicians, actors/actresses, sports athletes, TV personalities and social media influencers, as what prevented them from getting NS humor.

*For instance, Nicki Minaj. They make jokes of Nicki Minaj but I don't know who she is... they were saying Chinese and Americans have different favors for guys and for women's body shape. Americans like exaggerated bodies. And then one of the Americans said "oh yeah, sure, we all prefer Nicki Minaj". So I have a basic concept that must be some celebrity with big boobs... [so you thought he was being sarcastic?] Sure obviously. [Why obviously?] Because that guy's girlfriend is not like that. (laugh) Yeah, I think that's the case. Because he's the guy that doesn't agree with the opinion that women should have big boobs or exaggerated bodies. I know his history, I know his attitude. That's why I think he's just being sarcastic. {P1 CN M | casual talk with lab mates}*

To understand the humor, NNS not only will need to know who the public figures are, but also what about them that is often made fun of by people. In the above example, P1 was able to infer from the context that Nicki Minaj is a celebrity (her exact profession is not relevant to the humor in this case) whose body shape is an outstanding characteristic that humor might base on. In most cases, NNS would miss the humor because they have no background knowledge about the public figure whatsoever (e.g., their name, their profession, what about them that can be made funny) and are not able to infer from the context. P9 recalled an instance where she was in charge of finding the background music for a group project presentation. The group started to sidetrack to discuss funny things about a particular musician the American members seemed to all know. Having no clue what they were laughing about, P9 felt frustrated as if she was the one who slowed down the process.

*My group needs to present a snippet and we need background music. Everyone was suggesting what would be relevant and then one guy was like, “Oh we should have Jason Derulo”. And everyone was like “Oh my God yes!” And they switch gear to discuss some calendar thing, some funny video or memes about him. I was like, in my mind, who's that? I don't know him so I couldn't really get what they were talking about. I couldn't join them. I felt pretty bad at that point cuz I was collecting everyone's ideas, but the thing is I don't know who he is, that really slowed down the whole thing. {P9 CNF | group project meeting}*

Unlike in the previous example where P1 could identify the humorous frame and even sarcasm since he could infer the key characteristic of the person from the context, without knowing the exact profession of the public figure; in P9's case, knowing the exact profession of the public

figure (musician) did not avail figuring out what's funny about him, and the context provided no clue for her to figure that out.

*But I think one name I did remember but I don't know if it's right... like the Kardashian family. I think most international don't understand why they are famous and why American people do care about their things. If they talk about any member of this family I would say I would never get the joke. {P10 CN M}*

**Media content.** The second genre of the referential knowledge that NS humor often draws on is media content. This category can be closely related to the public figures genre in that it includes the characters the actors or actresses play or famous lines they said in the movie or shows, news or memes about the public figures, or their own social media activities that went viral. Or sometimes the media content may not be directly related to a specific public figure, but just generally refers to a movie or show that's relevant in the context. Many NNS reported that NS sometimes quote famous lines from movies or TV shows they assumed everyone had watched.

*They said some famous line from The Office, "how to (the) turn tables"? I guess everyone has watched so they laughed. {P15 KR M | Undergrad Business Advisory Council informal gathering, 30 members}*

*They quote Friends all the time. {P8 KR F | casual chat with close friends}*

NNS also reported instances where NS would compare someone in reality to a character in the movie or sitcom to eliminate the need to describe the characteristics of the person and meanwhile achieve some humorous effect.

*We were gossiping about a person in their lab and that person's like a robot, emotionless, but very good at completing tasks. Then they mentioned a*

*name (Janet). And they all laughed. First I thought it was their mutual friend I don't know, but then I encountered that again and I searched it's a character in The Good Place. It's a comedy show. {P22 CNF | gossiping during lunch break}*

In the above example, and an earlier similar example where NS compared the Dean to a politician, for the NNS, not knowing the referenced politician or media character, and most importantly not knowing what's with them, prevented them from getting the NS humor. It may not affect the communication significantly as they have one of the two scripts for the humor which is sufficient for them to understand what kind of person NS are describing. They may even be able to identify the humorous frame but the key to decrypt the humor is missing. They had to make the key themselves based on the first script available to them, which requires too much effort and thus renders it no longer funny for them (Wyers & Collins, 2004).

***Sociocultural knowledge and collective experience.*** The last genre of referential knowledge that NS humor can draw on is sociocultural knowledge and collective experience. Compared to the first two genres that both have something to do with popular culture that may be more specific to the current time, this genre of referential knowledge can be more stable and span a longer period of time; or can relate to things that have affected people of the same generation at a point in the past.

A few NNS identified that lacking the knowledge of cultural traditions such as holiday rituals, facts and stereotypes about certain states, names of food and brands, education system, and so on, as some hurdles in getting NS humor.

*Someone made a joke about culture differences between American and Canadian. I think it's about Thanksgiving, how they celebrate, what they eat for*

*celebration. I don't know much about Thanksgiving tradition, so I didn't really get it. {P13 KR M | casual chat in a friend's car}*

*People will casually mingle by making jokes about the state, for example, the weather or the general characteristics of people there... That is usually a point when I can't get the humor because I definitely know very little about each state in the US. {P18 CN F | casual chat in dorms during orientation}*

Many NNS alluded to the time property of the referenced knowledge, especially something that was existent or popular at a point in the past but no longer exists or popular now. Examples of this kind involve media entertainment that NS grew up watching and listening to, food NS used to eat, activities NS used to enjoy as a kid, collective experience influenced by certain policies, and so on. Twelve out of 28 NNS mentioned at least one instance of humor they experienced that failed due to their lack of knowledge of the “past”. One NNS explicitly pointed out that the one category of humor that she thinks most international students would not get is humor that references things from NS childhood. As the following quote illustrates:

*There is one category that is especially difficult for most international students I think is things from their childhood. When we hang out, they will say "do you remember that animation from when we were really little?" When they refer to some movies that were really popular for American children when they were little in the early 2000s, of course, I don't get it. I've never watched it. {P26 CN F}*

Similarly, P5’s remark echoed this point. In the previous section, I discussed how P5 and her close NS friends share so much intimate experience, memories and other things in common that the NS friends sometimes forget that she grew up in a different country and wasn’t exposed

to what they have been exposed to growing up in the US. The following is an example of what her NS friends have commonly been exposed to, and she expressed feeling excluded in those situations.

*Two days ago at my birthday party, we were in our room talking about some funny things they watched, commercials or something. And then they're like, "oh, remember that commercial, the yodeling Walmart guy, oh so funny." I was like, What are you guys talking about?... It's cowboy or something. Then there's this famous funny guy was advertising for Walmart. So I felt excluded in those humorous situations because I just didn't know. {P5 KR F | with close friends at her birthday party}*

P28 reported having trouble empathizing with NS regarding some shop signs that NS found reminiscent of the old time.

*A lot more times I don't get why it's funny. They might refer to a really old non-existent food that they used to eat, or a brand they used to know. I remember there was this movie trailer where there was this Blockbuster Video shop. My American friends were laughing about it. I just don't get it. Like, why is this shop sign funny? And then I asked my friends who said Blockbuster Video was really popular, you rent CDs and movies there in the 90s. And that's why they find it funny and I don't. {P28 CN F}*

Some NNS also acknowledged that the collective experience is not just a piece of referential knowledge or an imagery. Even if NNS learn about the knowledge from NS, they still would not find it funny because they could not bodily experience it to feel relatable. P14 recalled

an instance in which his American colleague shared a TikTok video that made most American colleagues (their age) laugh. They explained to him the background.

*They have shared experience that we don't feel relatable... they were talking "Oh thanks to Obama we eat healthy lunch" or something... it was sarcastic. They blamed Michelle Obama for taking away the cookies and chocolate milk, like ruined their childhood or something. That's something maybe funny only if you experienced it, you went to public school here. {P14 CN M | a TikTok video an American colleague shared}*

#### ***Perceived NS overestimation of NNS knowledge***

One common theme that ran through almost all the interviews with NNS was their perception of NS overestimation of NNS's (both referential and linguistic) knowledge when joking with them. A majority of NNS participants felt that NS often joked around assuming everyone shared the common ground, when in fact it was not true. As the following participant noted:

*I think they [NS] are assuming that listeners have the same background as the speaker. But the problem is sometimes they don't. So for people like me, maybe their humor may not be that effective as they might imagined. But it's not like there's discrimination or something but they're just naively assuming that we are at the same level as him or her. {P24 KR M}*

For NNS, it is therefore much easier to share humor with other international people even though they don't speak the same native language or share much in common. But the fact that other internationals are aware of the limited common ground makes the communication more effective.

*The thing about NS is that they don't assume you're from a different country, and they assume people they are talking to have the same American context. They talk about things that I really don't understand. For example they like to refer to one the most famous American TV shows that they assume everybody in their age would know. But of course I don't know. But if I talk to international people, if she's from Spain, she understands that even if she speaks about her country I would not understand. So she doesn't speak about it at all and focus on international subjects we both know, or she tells something about her country and explains it to me. It's a fair situation that she doesn't impose what she knows as if everyone should know. So it's much easier to understand. {P3 KR F}*

Many NNS acknowledged that NS interlocutors did not intentionally make those cultural references in their humor. Some expressed understanding that it is difficult for NS to figure out what an average or a specific NNS knows by taking their perspective as a NS. One Japanese participant noted:

*For native speakers they use the term as usual and they don't expect those terms as difficult phrases. I also didn't know some words to be really hard in Japanese when I was in Japan where there were some international students. I used very easy words for me, but for them it's rare to hear or difficult word for that situation. I think it happens a lot here. Maybe native speakers expect it to be an easy word like kindergarten level English, but for me, for adults or international students, it's very tough. I think it's difficult for native speaker to expect international students cannot understand this word. {P16 JP M}*

Some NNS also reported that NS assumptions about NNS knowledge seemed to be all-or-nothing. For instance, quite a few NNS recalled experiences in which NS assumed complete ignorance of NNS based on one or a few instances of their missing out on humor.

*If you don't quite get it because it involves some pretty new culture stuff, they (NS) cannot joke with you, right? They will just assume you don't understand any of them. Then they'll treat you like a complete newcomer. When they realized I didn't get it, they talked in a way as if you, as an international student will never understand. So they tried to explain everything, even basic things to you. But that makes yourself feel really bad. I'm only confused about only one joke. {P17 CN F}*

It seems possible, at least from a NNS perspective, that not only might it be difficult for NS to make accurate assumptions about NNS knowledge prior to the humorous interaction, but also can be hard for NS to gauge, adjust and update their assumptions about NNS knowledge on a moment-by-moment basis through interactions.

### **Perceived interactional challenges**

As reviewed earlier, governed by the rules of grounding, if the listener fails to understand a message, it is preferable that they signal to the speaker as soon as possible that the message has not been grounded and thus needs repair, so that there will not be subsequent organizational troubles such as backtracking (Schegloff, Jefferson, & Sacks, 1977). With respect to humor, since laughter is generally known as an appropriate response, and in fact Norrick (1993) viewed humor and laughter as an adjacency pair; humor recipients tend to exploit laughter to avoid requesting repair when they don't understand the humor (Sacks, 1974). Therefore, the presence of laughter is not reliable evidence that humor is successfully grounded at the level of understanding.

I found similar patterns when NNS perceived difficulty in understanding the humor. In a majority of cases, they would pretend they get the humor and laugh along or smile. In one of the NNS words, “fake it before you can make it” (P4). Only in a few cases where 1) the size of the group is small (fewer than 3 people), and 2) they feel relationally very close with the interactants, and 3) the conversational setting is casual and not task-oriented, would they feel comfortable to request clarification.

Most NNS admitted that they don’t know how to deal with unshared humor “professionally”.

*Work is pretty straightforward. If you don't understand then just ask in a professional manner. I know what to do, versus if it's a joke, I don't know how to handle it in a professional manner, because if you don't get it, you don't smile, it's very simple. But then if I don't get it and I don't smile, it's offensive to somebody. So I feel jokes are pretty stressful compared to if it's work-related where I am able to ask questions and do it professionally. {P20 CN F}*

In this section, I lay out the challenges and concerns reported by NNS underlying their withholding requests for repair in humorous interactions with American NS. These challenges include concerns that the repair will spoil the humor, and that it will elicit more referential knowledge that NNS anticipate they would not know, which I further categorize as challenges regarding the interaction and the humor discourse itself. There are also challenges regarding the interpersonal dynamics between the humor interactants, namely the face concerns for the speaker and NNS themselves. Some of these challenges are specific to NNS and some may be universal.

### ***Challenges with respect to the interaction and humor discourse***

As E.B. White (1941) put, “Analyzing humor is like dissecting a frog, few people are interested, and the frog dies of it” (p.16), this conventional belief that explanations will spoil humor poses a primary interactional challenge in grounding humor. NNS participants reported that they wouldn’t want to ask the speaker to explain because it will spoil the humor and “ruin the vibe”. As the following quotes illustrate:

*If other people keep asking and the joker keep explaining the joke, it will ruin the whole mood. It will affect the atmosphere. {P10 CN M}*

*It will not be funny if you have to explain it. The fact that I don't understand it and I require her help to understand it makes it not funny anymore. {P2 VN F}*

For NNS specifically, an additional challenge in grounding NS humor is that even if they request repair, they still wouldn’t be able to successfully understand because they anticipate there would be other cultural references in the repair that they don’t share.

*When you know more, you're confident to ask people to explain. But when you don't know enough... if through explaining this reference they give you another reference, would you be able to understand those more references? {P21 CN F}*

*I found cultural questions were more irritating for people to answer, because there's no short answer. I would ask follow-ups. It would always come with a follow-up because to explain this they might need to refer to something else that I don't know. {P11 Japan M}*

Understandably, endless repairs to ground one piece of humorous message do not adhere to the least effort principle (Clark, 1996) and it is even more uneconomical for interlocutors to spend much effort in grounding what is conventionally viewed as “frivolous and unproductive” (Morreall, 1991, p.359).

***Challenges with respect to the interpersonal dynamics between the interactants***

**Concerns for the speaker’s face.** Since no disparaging or aggressive types of humor were reported by NNS in my study, many of them perceived good intentions in NS humor. Indeed, humor is often used by individuals to amuse others to strengthen relationships (Boxer & Cortés-Conde, 1997; Hay, 2000; Holmes, 2000; Norrick, 1993, 2003), to affiliate with cognitively and socially similar others (Flamson & Barrett, 2008), or lighten the atmosphere as a politeness strategy (Brown & Levinson, 1956). NNS considered NS using humor with them as a way to show friendliness and inclusiveness, so rejecting the gesture of friendliness can be a face-threatening act. The following quote illustrates the frustration NNS reported to have experienced when she perceived the good intentions of NS with their humor but was unable to respond,

*It's definitely overwhelming if you don't understand when native people are trying to be funny. When they try to joke with you, they show you friendliness, and show (that) you are one of them. But you are not capable to take their offer.*

{P20 CN F}

Additionally, NNS reported to be concerned that their request for clarification would put the NS speaker’s face at risk, because the listener not getting the humor may also imply that the speaker has a bad sense of humor or isn’t good at delivering it.

*It's awkward (to ask about humor) because you're challenging the person's sense of humor. {P17 CNF}*

One NNS made a comparison between asking to explain humor versus asking for clarification in a non-humor situation.

*If you ask when it's a joke, it will make the joke teller feel embarrassed because you don't understand his or her joke. But if it's something technical knowledge, you could just ask, and they should feel superior because they have some knowledge that you don't have. But in the case of humor you are implying that you don't think their joke is funny (by asking) and that can be awkward. {P10 CNF}*

P16 noted that he would be more comfortable to ask for clarification if the face threat to the speaker is canceled when another person in the conversation laughs at the humor, which suggests that it's not the speaker's bad performance at fault.

*I don't have to laugh if there are many people who are laughing at the joke, I'm not totally in charge of laughing about the joke. If it is between me and the person, the person's expecting me to react to the joke. I felt more responsible to react to what he was joking. I think if we were around three people, maybe it's easier for me to ask why the two are laughing, because the person who made a joke doesn't feel embarrassed because there are already people who are laughing at the joke so the person doesn't feel it was his mistake by making bad jokes. {P16 JP M}*

Many other NNS shared similar feelings of obligations and responsibilities to react to NS humor with laughter so that NS wouldn't feel embarrassed.

*I would say if there's eight people I may be more inclined to looking at my screen (minding her own business and not laugh). Because I would assume that other people will laugh and I don't need to. But if there's only three people, it kind off forced me to respond to the humor because there's only three, someone have to respond to the joke. {P10 CN F}*

Some NNS noted that they would even "force" a reaction to "match" NS expectations with respect to humor, as a way to show respect and politeness to the speaker.

*I'll just act interested about the joke and show I'm respectful what they're talking about, so I was faking, not faking but acting politely. {P17 CN F}*

*I was trying to match their expectations for what they want to hear, the reactions they want to see from me in terms of their humor. So I would almost force myself to fake laugh. {P5 KR F}*

NNS perceived a threat to the speaker's face if they requested clarification on NS humor, because such repair requests may imply a rejection of a friendly gesture, and a lack of appreciation or negative assessment of the speaker's sense of humor.

**Concerns for self face.** Requesting repair in humorous conversations is perceived as face-threatening to NNS's own face, too. This is reflected in two aspects: NNS's needs for impression management to look interpersonally sociable and intellectually smart. As this quote summarizes,

*It's quite a lot tied to keeping up the impression that I'm a sociable enough or a smart enough person to get the joke and hang along with the conversation adequately. {P8 KR F}*

Many NNS reported that asking about humor can imply that they are too serious or too nerdy, whereas they want to present themselves to others as fun and playful persons to interact with.

*You're putting yourself in a very awkward position (by asking about humor), you're giving the person an impression that you are pretty serious, and maybe they (the person) should be more careful next time they talk to you. So it can make a longer effect. {P17 CN F}*

*You want other people to think of you as more positive, like a fun person to be around with, and not nerdy. {P27 KR F}*

NNS reported that in their native languages, they were often able to playfully resolve the face threats to both the speaker and themselves. But in English and American contexts, they reported to not have the cultural-linguistic resources to do such impression management.

*In native language you feel more confident to express and show that you're not getting it but in a decent and playful manner, to show you're still a funny, not serious person. But here because of the language barrier sometimes you have trouble with the word choice, with the American way of expressing that but not offending the person. So sometimes I feel very frustrated because of that. {P27 KR F}*

*in Chinese I can use my tone and my expressions or just my general facial and body language to show I'm not trying to be mean but I really didn't get your joke, where in US, I'm not capable of delivering the message that even though I can't get your joke, I still think it's good to be humorous. {P18 CN F}*

Another impression management need is to look smart. In line with previous findings such as Sacks (1974), and Bucholtz and colleagues (2011), NNS participants reported to feel motivated to hide their lack of understanding if they perceive the knowledge involved in the NS humor as something they are supposed to know or important for them to know, and thus admitting not knowing it poses threat to their face. What differs for NNS is their inability to judge whether the knowledge is generic such that they are supposed to know or is niche knowledge that only a specific population would be expected to know. As the following two quotes adequately illustrate, P8 simply assumed the knowledge required to get the humor to be as basic as knowing what the Earth is, and P10 admitted that he had no clue regarding which domain the missed knowledge belonged to to be able to judge if it's something important to know or he'd be interested in knowing.

*In daily conversations, you think everybody knows about this. You don't want to be perceived as dumb. If everyone around you knows the Earth and you ask them "what is Earth?" and that would be a really stupid question. You have this peer pressure to feel included, so you pretend to laugh, to feel like you are intellectually on the same level with everyone else. {P8 KR F}*

*If it's a domain that I care about or I'm interested in, I will feel that that's my bad because I don't have enough knowledge to understand this joke. But sometimes I can't tell which domain that belongs to, so it can be frustrating. {P10 CN M}*

NNSs reported that in their native language they often have a better sense of what they are supposed to know. But in a foreign language and culture, they are deprived of such intuition. They often judge whether they should know certain references based on how frequently NSs have referred to them.

*I would assume if six different people talk about the same thing with me, they assume me to know it. That's one way of identifying if something is important or essential to know. {P18 CN F}*

*If something about culture is referred to really frequently in conversations, I would assume it's something people would expect you to know. {P13 KR M}*

Many mentioned that the compulsion to know everything comes from “peer pressure”. Some thought of American students as peers, so they viewed an average American’s knowledge as the benchmark; and some thought of other Asian international students as peers, so they based their judgement on whether their knowledge was below the average of other international students’ knowledge. Regardless of which peers they have in mind, whether their peers possess the knowledge required to get the humor seems equally mysterious to them.

*I think maybe it comes down to peer pressure. Let's say if there's a lot of international students here and most of them didn't get the humor, maybe I will feel much better. If almost every international student got the point and I didn't, I will feel more embarrassed. [Peer pressure. Were there other international students in the conversation?] No, that's why I don't have a standard. So I don't know if this is a joke I should get or it's a joke that a lot of foreigners wouldn't get. {P10 CN M}*

*I didn't know if it was something that Asians are not supposed to know. I wouldn't know for nonnative groups if this is something everyone should know or only a few people know. {P21 CN F}*

*Since I have spent more than two years here, I should get the humor. That's why I feel a little bit embarrassed... I just think if I study here, I should have a higher standard for myself. I should know English better or know their culture better than I am at this time, if not like an average American but at least slightly below average American would know. So I forced myself to know everything. {P25 CN F}*

## **Discussion**

Study 1 demonstrated that East Asian NNS downplayed the language difficulties they had experienced in humorous interactions with American NS and instead emphasized that it was the unfamiliar referential knowledge specific to American culture that hindered their comprehension of NS humor. In fact, even though some of the difficulties that are seemingly related to language, such as puns, failed for NNS not because they were not able to identify the phonological play, but due to their lack of the referential knowledge that one or more of the meanings of the pun referred to (e.g., not knowing who Mike Pence (pens) is (P6)). According to East Asian NNS, while they have no problem understanding NS referential humor that draws on the immediate context (e.g., taking the same class, sharing the same category membership such as major and expertise), they struggled with NS humor drawing on the broader American context, and this type of humor accounted for the largest proportion of the humor they encountered. Understandably, when there is limited shared immediate context, humor drawing on the broader American context can reach a diverse audience who, even though may not share the same small category membership, may be

members of a broader social category. However, it may not be obvious to NS that NNS may not share the broad American context their humor is based on. This seems to be true even for intercultural interactants who have established intimate relationships and who share a long history of interactions. As a result, the dominant sources of confusion for East Asian NNS in understanding American NS humor were related to public figures, media content, and sociocultural knowledge. Further, East Asian NNS perceived that American NS's (mis)assumption of shared common ground was key to why NS humor would fail for NNS. After all, humor, in a sense, is a test of common knowledge, knowledge that the humor initiator often expects their recipient to possess (Sacks, 1974).

There are interactional challenges in grounding humor. To begin with, asking for clarification when not understanding a humorous message is generally not considered appropriate both in terms of the effectiveness of the humor discourse itself (i.e. asking spoils humor), and in terms of the social and interpersonal implications (i.e. asking threatens both the speaker's and the listener's face). This echoes Bell (2009)'s finding that the common response to failed humor was laughter and not clarification requests. For East Asian NNS specifically, there are additional challenges. NS may be able to judge whether other NS could be expected to know the referential knowledge involved in a joke, and thus evaluate the face threat if they can't understand it (Bell, 2013; Sacks, 1974). However, NNS reported to struggle with NS humor because they had no idea whether NS in general would have this knowledge. As a result, East Asian NNS tended to assume that the referential knowledge involved in American NS's humor was basic, common knowledge that an average person their age would know and thus they were also supposed to know.

Essentially, Study 1 revealed that there might be a misalignment of the assumptions of common ground between American NS and East Asian NNS that might account for confusion in

interculturally failed humor, as well as for the interactional challenges in grounding humor. Specifically, American NS humor creators appear to overestimate East Asian NNS's knowledge of American popular culture such as public figures, media content, and other sociocultural knowledge, which American humor often draws on. East Asian NNS addressees appear to overestimate the commonality of the knowledge among American NS and other international people, such that they feel ignorant and embarrassed for not knowing what they assumed to be important. Consequently, instead of requesting clarification, East Asian NNS may fake laughter to match what they thought their American NS friends wanted.

Nevertheless, based solely on NNS's accounts and perspective, I can't be certain that American NS truly overestimated East Asian NNS's knowledge when constructing humorous messages. To obtain data on the American NS perspective and determine whether the East Asian NNS's perceptions of such overestimation holds true, I examined whether American NS are able to accurately estimate East Asian NNS's knowledge, especially the knowledge that American humor often draws on. Study 2 presented in the next chapter addresses this question.

## Chapter 4: Study 2: Estimation of Other's Knowledge Across Cultural Boundaries

The results of Study 1 suggest that there might be a misalignment of American NS and East Asian NNS's assumptions about one another's knowledge, especially knowledge tied to popular culture that the American NS's humor drew on in conversations. Specifically, NNS felt that NS naively assumed they shared the knowledge required to understand their humor, given that cultural references (e.g., public figures) unfamiliar to NNS were identified as the dominant source of confusion. NNS also tended to assume that unfamiliar cultural references were basic, generic knowledge shared by all NS, and thus that they should also know these references. This (mis)perception poses interactional challenges for grounding the humor that NNS don't understand, because it is face-threatening to request repair and show lack of potentially important knowledge. Based solely on the NNS perspective, the first study provides no direct evidence that NS actually "assumed" at all that NNS possessed the referential knowledge required to get their humor. To verify this, a reasonable first step is to examine how accurately NS can estimate NNS culture-specific knowledge. Study 2 first obtains information as to whether American NS and East Asian NNS possess the knowledge of American popular culture that American humor often draws on, and then examines NS and NNS's ability to estimate their cultural ingroup and outgroup's knowledge. I propose the following hypotheses and research questions regarding participants' **actual knowledge (H1)** and their **estimate of other's knowledge (H2, RQ1, H2a, H2b)**:

**H1:** A larger percentage of NS than NNS will possess the knowledge specific to American culture.

**H2:** NS will be estimated to have a higher percentage of individuals possessing the knowledge than NNS.

**RQ1:** Will NS and NNS differ in their estimate of other's knowledge?

Following what has been called the “false consensus bias” or “the curse of knowledge bias” (e.g., Bromme et al., 2001; Fussell & Krauss, 1992; Hinds, 1999; Nickerson et al., 1987), that individuals' estimation of other's knowledge will be biased in the direction of their own knowledge, I present the following hypotheses and research questions:

**H2a:** Individuals who possess the knowledge will produce higher estimates of other's knowledge than those who don't possess the knowledge.

**H2b:** Individuals who possess the knowledge will be more likely (than those who don't) to overestimate the percentage of others who would know the knowledge.

While it has been shown that individuals can make relatively accurate assumptions about the knowledge of others who share the same category membership (e.g., Fussell & Krauss, 1991, 1992; Lau et al., 2001), there has been little investigation into how accurately individuals can estimate cultural outgroup members' knowledge. We can best infer from the current understanding of the social distribution of knowledge between other types of category memberships such as gender. For instance, Fussell and Krauss (1992)'s third experiment suggested that individuals were sensitive to gender differences in domain expertise and knowledge (e.g., women might be more familiar with kitchen utensils and men with car parts) such that even those who didn't know the name of an item were good judges of which gender would be more likely to know it. Nevertheless, these findings are not directly transferrable to the current inquiry. First, expectations about what men and women know derive from gendered experience and expertise in household activities resulting from traditional gender roles, and most importantly are socially shared (Deaux, 1976). These gendered expectations are different from what NS expect NNS to know about American pop culture and what NNS expect NS to know about American pop culture, in that the latter

expectations may not be socially shared. Second, Fussell and Krauss (1992)'s study did not provide cross-gender analysis to answer whether estimators were more accurate at estimating the knowledge of their ingroups than that of outgroups (e.g., are men better at estimating men's knowledge than estimating women's knowledge?).

In Chapter 3 of this dissertation, NNS reported difficulties in judging whether the referenced knowledge was known by most Americans. This suggests that at least for East Asian NNS, estimates of cultural outgroups might be less accurate than that of ingroups. I thus present the following hypotheses and research questions regarding **estimate accuracy**:

**H3:** Individuals are more accurate at estimating the knowledge of their cultural ingroups than outgroups.

**H3a:** NS can estimate other NS's knowledge more accurately than they can estimate that of NNS.

**RQ2:** Will NS overestimate or underestimate NNS's knowledge?

**H3b:** NNS can estimate other NNS's knowledge more accurately than they can estimate that of NS.

**RQ3:** Will NNS overestimate or underestimate NS's knowledge?

Note that the knowledge I tested on participants and had them estimate that of others all included three components: 1) the name of the public figure, 2) generic knowledge about the public figure (their profession), and 3) humor-related knowledge about the public figure.

## **Method**

To test the hypotheses and answer the research questions, I conducted an online experiment in which participants were shown pictures of sixteen public figures in random order and were asked to provide the name for each public figure, answer one generic question and one humor-

related question about the person, and then estimate the percentage (in ten percent intervals) of American students and East Asian international students at the university would be able to provide the correct name and the correct answers to the questions about each public figure.

### **Study design**

The study used a 2 (culture of the estimator as between-subjects factor: NS and NNS) by 2 (culture of estimated target as within-subjects factor: NS and NNS) mixed design. The order of the estimated target's culture was randomized and counterbalanced.

### **Participants**

Participants were recruited through the university's internal online participant recruitment system, as well as through the Facebook pages and Wechat groups of CSSA (Chinese Students and Scholars Association), Cornell KSA (Korean Students Association), CTSA (Cornell Taiwanese Students Association), Cornell Japan US Association, Cornell HKSA (Hong Kong Students Association). Participants were given either 1 extra credit or a \$5 USD Amazon e-gift card compensation for their time.

A total of 211 US-born Americans (136 women, 73 men, 1 trans man, 1 prefer not to answer) and 81 East Asian international students (54 women, 25 men, 1 non-binary, 1 prefer not to answer) completed the study. The age for American participants ranged from 18 to 38 ( $M=20.24$ ,  $SD=1.93$ ), and for East Asians ranged from 18 to 37 ( $M=25.38$ ,  $SD=4.37$ ). The majority of the American participants (98%) were undergraduate students, whereas a majority of East Asian participants (79%) were graduate students. Participants' majors of study covered a wide range.

East Asian international students reported an average of 5.17 years ( $SD=2.92$ ) experience living in the US and American participants reported an average of 0.74 years ( $SD=1.75$ ) of overseas experience living in a country or region where English is not the dominant language. American NS reported interacting with individuals whose native language is different from their

own significantly less frequently ( $M=4.27$ ,  $SD=1.46$ ) than East Asian NNS ( $M=5.33$ ,  $SD=1.41$ ,  $t(290)=5.71$ ,  $p < .001$ ).

## Materials

The stimuli consisted of sixteen American public figures in six professions: politicians, actors/actresses, musicians, news anchors, TV personalities, and sports athletes. The choice of domains was informed by the interviews in Study 1 and reflects the areas of culture-specific knowledge that East Asian NNS reported that they often lacked. The resulting stimuli consisted of 7 women and 9 men (see Figure 2). Four of the public figures were Black and 12 were white. I also included three East Asian public figures from three distinct domains and countries as fillers to detect random answers and to prevent participants from guessing the study purpose.

The pictures used as stimuli (see Figure 2) were profile photos from the public figures' Wikipedia page or recent media photoshoots that were not posed for magazine covers. For professional athletes, care was taken to ensure that they were not dressed in uniform. Background information that might provide cues to the person's profession were removed using Photoshop (e.g., flags, lapel pins). All photos were head shots in which the person's head took up approximately three quarters of the photo. The pictures were standardized to be 2x3 inches and 400x600 resolution.

The public figures were carefully selected, and the questions about each public figure were developed, through a pilot study that aimed to determine (a) the percentage of Americans who can recognize and name each public figure, in order to finalize the selection of public figures of high-, medium- and low-recognizability for Americans for the main study; and (b) what Americans commonly know about each public figure that can form a basis for humor, in order to design the questions that test individuals' humor-relevant knowledge for the main study (e.g., knowing who Bernie Sanders is not enough to understand jokes such as "steal Bernie's look"; knowing the viral

spread of the memes of him wearing mittens at Biden's Presidential Inauguration is key to getting the joke).



**Figure 2. Pictures of Public Figures**

To form a pool of public figures that American humor often jokes about, three undergraduate research assistants (2 men, 1 woman) watched a famous American comedy show that often parodies popular culture and politics – Saturday Night Live, Seasons 44 to 47 (first three

episodes). Their goal was to document and categorize the public figures ridiculed or parodied in the show. They identified a total of 527 public figures. Non-Americans and public figures categorized as historical were removed. I also removed public figures who were likely to be involved in scandals or breaking news any time during the data collection period, so as to avoid changes in their recognizability during the main study. Then I randomly selected ten public figures for each of the six domains, ranging along a continuum of low to high recognizabilities judged by the undergraduate research assistants.

Next, I surveyed native born American students, asking them to provide the name of each person and answer three open-ended questions about that person: 1) what is the person known for? 2) how is the person portrayed in different media? 3) a joke about the person would be based on...? The preliminary study took place between October 15, 2021 to November 25, 2021. Participants were recruited through the university's internal system and were predominantly undergraduate students. Each participant was randomly shown two (out of ten) public figures per domain in random order. A total of 249 valid responses were collected (65.2% females, 33.5% males, 1.2% prefer not to answer; mean age = 20.93, SD=2.75), resulting in 20-30 responses per public figure.

### ***Stimuli development***

The recognizability for each public figure was measured by the percentage of American participants who correctly named the public figure. It ranged from 0% to 95.2% across all domains. Public figures with greater than 80% recognizability were deemed high-, 40-60% as medium-, and lower than 20% as low-recognizability. For the main study, I picked one public figure from each of the three recognizability levels for each domain (for News there were only medium- and low- recognizability, and for TV only high and medium) to finalize the selection of public figures.

To develop quiz questions that test individuals' humor-relevant knowledge about each public figure, I first had four undergraduate research assistants (3 women, 1 man; all American NS) code the open-ended responses into idea units (defined as a word, phrase or sentence that provides one unique piece of information). An average of 15 idea units (range: 0-51) were generated per public figure per response across the three questions. Grouping similar idea units using affinity diagramming rendered an average of 12 distinctive themes (range: 0-39) per public figure. All the themes were further coded for their commonality (number of responses mentioning the theme), fact-or-opinion (1=fact, 0=opinion), verifiability (if factual theme: 1=verifiable, 0=not verifiable), and "jokability" (1=jokes can base on, 0= unlikely for jokes to base on). We took the theme that ranked highest on all four dimensions to be made into a statement about the public figure; and took the rest of the themes highly ranked on commonality to flip them (e.g., for Bernie Sanders, "Democrat" to "Republican"; "radical socialist" to "too moderate"; "ran for president" to "never ran for president") and make into statements that are clearly wrong options. One of the undergraduate research assistants was a member of the university humor club called Humor US! and was a professional comedy sketch writer. She proofread all the quiz questions to make sure each correct answer was a piece of knowledge that humor can be based on (e.g., for Bernie Sanders the correct choice being "He wore mittens at the Presidential Inauguration", see Figure 3; refer to Appendix C for a full set of the questions).

### **Procedure**

The study took place on Qualtrics, an online survey tool. Upon reading and signing the consent form, participants saw the picture of the stimuli and were asked to provide the name of the public figure shown, answer the generic question about the public figure's profession, and the humor-related question (see Figure 3 for an example, and Appendix C for the full set of questions). After the participants have answered all the questions obtaining their own knowledge about all the

stimuli, they were reminded of each public figure and associated questions, in a way that Figure 3 shows, in order to estimate the percentage of American NS (or East Asian NNS) who would correctly provide the name and answer the questions. After they have estimated all the stimuli for one cultural group, they were asked to do the same estimation for the other cultural group. The estimated target in the text was color coded differently (blue and red) and bolded to prevent participants from missing the switch of estimated target.



- Name
- Q1. Which of the following domain/profession is associated with this person?
  - A. politician
  - B. actor
  - C. musician
  - D. news anchor
  - E. I don't know
- Q2. Which of the following descriptions is true about this person?
  - A. He wore mittens at the Presidential Inauguration
  - B. He is a Republican politician
  - C. He is portrayed as being too moderate by left-leaning media
  - D. He has never run for president himself
  - E. I don't know

**Figure 3. Example Stimuli**

## **Measures**

*Actual knowledge.* Actual knowledge for each cultural group for each type of knowledge (name, generic and humor) was measured by the percentage of participants from that cultural group who answered the respective question correctly.

*Estimate of other's knowledge.* Estimate of other's knowledge was measured on a scale of 0% to 100% (in ten percent interval) indicating the estimated percentage of "Cornell students who were born and raised in the U.S." and "Cornell students who were born and raised in East Asia (e.g., China, South Korea, Japan, etc.)" who would correctly answer the questions. Estimate values ranged from 0% to 100% and were normally distributed (as indicated by the normal Q-Q plots).

*Estimate accuracy.* Estimate accuracy was indicated by the correlation coefficients between the estimated percentage of "Cornell students who were born and raised in the U.S." (or "Cornell students who were born and raised in East Asia (e.g., China, South Korea, Japan, etc.)") who could correctly answer the questions and the actual percentage of the people from that culture who correctly answered the questions.

*Direction of estimate error (over-/under- estimation).* Direction of estimate error was measured by calculating the deviation of estimated percentage from the actual percentage. Direction of estimate error = Estimated percentage – Actual percentage. Positive values indicate overestimation, and negative values indicate underestimation.

*Interpersonal Closeness.* Interpersonal closeness was measured using Inclusion of Others in the Self (IOS) Scale by Aron et al. (1992). It is a single-item, pictorial measure using the position of two circles indicating the distance between the self and the other (see Appendix C). I measured interpersonal closeness to East Asian NNS (as the other) and to American NS (as the other) in two separate questions.

## Results

### Actual knowledge

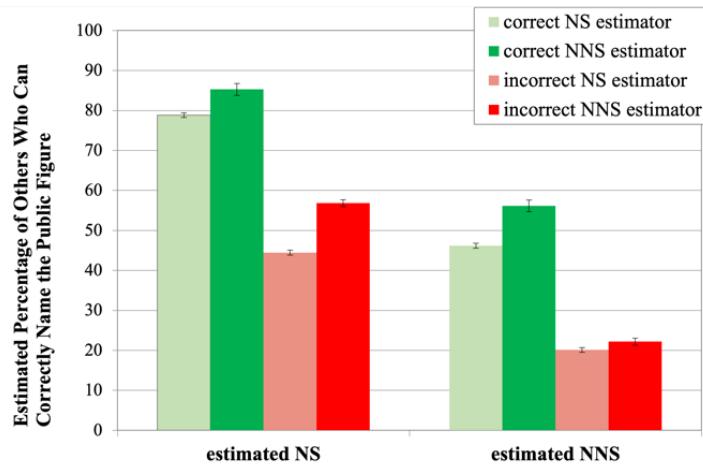
Percentages of correct name identifications by NS ranged from 5.69% for Jeanine Pirro, to 96.68% for Oprah Winfrey; percentages of correct answers to generic questions about the public figures by NS ranged from 26.54% for Phoebe Bridgers to 97.16% for Oprah Winfrey; percentages of correct answers to humor-related questions by NS ranged from 20.85% for Phoebe Bridgers to 92.42% for Simone Biles. Percentages of correct name identifications by NNS ranged from 0% for Phoebe Bridgers, to 55.56% for Oprah Winfrey; percentages of correct answers to generic questions about the public figures by NNS ranged from 9.88% for Phoebe Bridgers to 72.84% for Oprah Winfrey and Bernie Sanders; percentages of correct answers to humor-related questions by NNS ranged from 2.47% for Phoebe Bridgers to 45.68% for Simone Biles (see Appendix B).

One-way ANOVA showed that there was a significant difference in the mean actual percentages of NS and NNS participants who correctly named the public figures ( $F [1, 9342] = 4978.13, p < .0001$ ). NS correctly provided between 0 to 14 (87.5%) names of the public figures ( $M=52.10\%, SD=17.98\%$ ), and NNS correctly named between 0 to 13 (81.3%) public figures ( $M=17.98\%, SD=19.39\%$ ). One-way ANOVA showed that there was also a significant difference in the mean actual percentages of NS and NNS participants who correctly answer the generic question ( $F [1, 9342] = 2728.63, p < .0001$ ). NS correctly answered between 2 to 16 (100%) generic questions ( $M=70.2\%, SD=16.17\%$ ), and NNS correctly answered between 1 to 14 (87.5%) generic questions ( $M=46.30\%, SD=21.04\%$ ). One-way ANOVA showed that there was also a significant difference in the mean actual percentages of NS and NNS participants who correctly answer the humor-related question ( $F [1, 9342] = 7319.25, p < .0001$ ). NS correctly answered between 1 to 15 (93.75%) humor-related questions ( $M=52.78\%, SD=19.70\%$ ), and NNS correctly answered

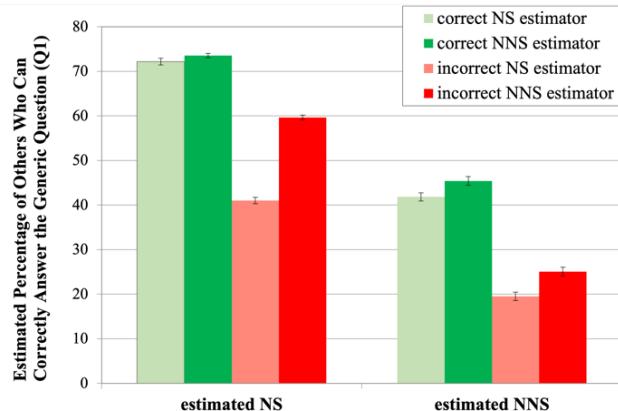
between 0 to 10 (62.5%) humor-related questions ( $M=20.52\%$ ,  $SD=17.78\%$ ). Across all three types of knowledge, there were a larger proportion of NS than NNS who possessed the knowledge about American public figures. H1 was supported.

### **Estimate of other's knowledge**

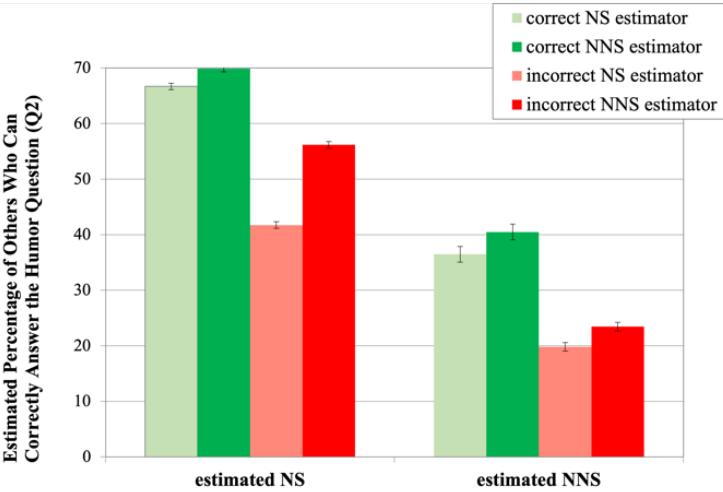
To test H2, H2a, and answer RQ1, I conducted a series of 2 (estimators' culture) by 2 (estimated target's culture) by 2 (own knowledge) Mixed Model ANOVA on individuals' estimates of other's name, generic, and humor-related knowledge.



**Figure 4. Estimated Percentage of Others Who Could Correctly Name the Public Figure, by estimator's cultural group by estimated target by own knowledge (error bars represent standard error of the mean).**



**Figure 5. Estimated Percentage of Others Who Possess the Generic Knowledge, by estimator's cultural group by estimated target by own knowledge (error bars represent standard error of the mean).**



**Figure 6. Estimated Percentage of Others Who Possess the Humor Knowledge, by estimator's cultural group by estimated target by own knowledge (error bars represent standard error of the mean).**

For name knowledge, there was a significant main effect estimator's cultural group ( $F [1, 2717.87] = 85.16, p < .001$ ). NNS produced significantly higher estimates ( $M=54.65, SE=.69$ ) for other's knowledge than NS did ( $M=47.45, SE=.37$ ). There was a significant main effect of estimated target's culture ( $F [1, 3580.32] = 1588.51, p < .001$ ). The estimated percentage of NNS ( $M=36.00; SE=.54$ ) who would know the names of the public figures was significantly smaller than that of NS ( $M=66.09; SE=.54$ ). There was also a significant main effect of the estimator's own knowledge ( $F [1, 8715.16] = 2790.76, p < .0001$ ). Those who could correctly name the public figure produced significantly higher estimates for others ( $M=66.03, SE=.56$ ) than those who could not correctly name the public figure ( $M=36.07, SE=.38$ ).

For generic knowledge, there was a significant main effect estimator's cultural group ( $F [1, 2138.39] = 92.78, p < .001$ ). NNS produced significantly higher estimates ( $M=50.98, SE=.64$ ) for other's knowledge than NS did ( $M=43.67, SE=.41$ ). There was a significant main effect of estimated target's culture ( $F [1, 2806.22] = 1538.95, p < .001$ ). The estimated percentage of NNS ( $M=33.02; SE=.53$ ) who would correctly answer the generic question was significantly smaller than that of NS ( $M=61.64; SE=.53$ ). There was also a significant main effect of the estimator's

own knowledge ( $F [1, 8379.14] = 1812.22, p < .001$ ). Those who could correctly answer the generic question produced significantly higher estimates for others ( $M=58.27, SE=.45$ ) than those who could not ( $M=36.38, SE=.47$ ).

For humor-related knowledge, there was a significant main effect estimator's cultural group ( $F [1, 2495.24] = 58.58, p < .001$ ). NNS produced significantly higher estimates ( $M=47.49, SE=.72$ ) for other's knowledge than NS did ( $M=41.18, SE=.40$ ). There was a significant main effect of estimated target's culture ( $F [1, 3391.93] = 1302.17, p < .001$ ). The estimated percentage of NNS ( $M=30.06; SE=.57$ ) who would correctly answer the humor-related question was significantly smaller than that of NS ( $M=58.62; SE=.57$ ). There was also a significant main effect of the estimator's own knowledge ( $F [1, 8573.15] = 979.99, p < .001$ ). Those who could correctly answer the humor-related question produced significantly higher estimates for others ( $M=53.38, SE=.58$ ) than those who could not ( $M=35.29, SE=.42$ ).

Across all three types of knowledge, it is evident that a) NS were estimated to have a higher percentage of individuals possessing the knowledge than NNS (H2 was supported); b) NNS produced significantly higher estimates of other's knowledge than NS did (RQ1); and c) those who possessed the knowledge tended to produce higher estimates of others than those who didn't possess the knowledge, which is consistent with H2a.

### **Estimate accuracy**

To test H3 that hypothesized that individuals are more accurate at estimating the knowledge of their cultural ingroups than outgroups, I did a series of separate regressions of mean estimates for NS and NNS (formed by averaging individual estimates for each item) estimated by NS and NNS respectively, onto the actual percentages correct for each group (see Table 2).

<b>Regression</b>	<b>Intercept</b>	<b>b</b>	<b>R</b>	<b>R-square</b>
	<b>Name</b>			
NS estimate NS	33.63 (.33)	.56 (.01)	.87***	0.76
NNS estimate NS	52.19 (.77)	.19 (.01)	.39**	0.15
NS estimate NNS	19.22 (.27)	.82 (.01)	.76***	0.58
NNS estimate NNS	17.49 (.03)	.61 (.03)	.52**	0.28
<b>Q1 generic knowledge</b>				
NS estimate NS	21.67 (.54)	.59 (.01)	.82***	0.66
NNS estimate NS	51.28 (1.16)	.21 (.02)	.36**	0.13
NS estimate NNS	8.24 (.44)	.58 (.01)	.75***	0.56
NNS estimate NNS	14.93 (1.09)	.43 (.02)	.48**	0.23
<b>Q2 humor-related knowledge</b>				
NS estimate NS	25.16 (.39)	.57 (.01)	.83***	0.68
NNS estimate NS	49.19 (.87)	.19 (.02)	.33**	0.11
NS estimate NNS	15.74 (.33)	.62 (.01)	.61***	0.37
NNS estimate NNS	18.99 (.69)	.39 (.03)	.35**	0.12

N (NS estimators) = 3376, N (NNS estimators) = 1296

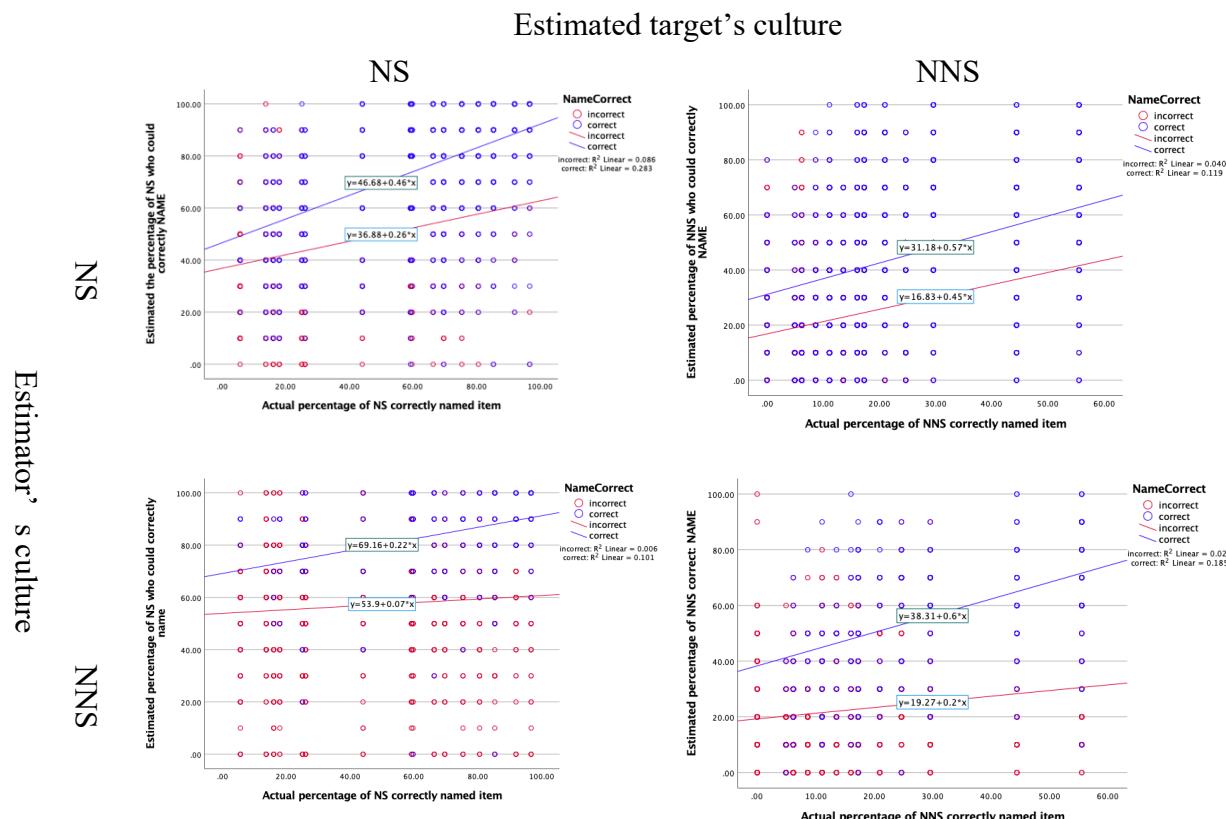
\*\*p<.001, \*\*\*p<.0001

**Table 2. Regressions of Estimated Percentages Correct Onto Actual Percentages Correct.**

For name knowledge, NS estimators were more accurate at estimating NS targets (ingroup) than estimating NNS targets (outgroup) ( $r_s = .87$  and  $.76$ ,  $z=13.83$ ); NNS estimators were more accurate at estimating NNS targets (ingroup) than estimating NS targets (outgroup) ( $r_s = .52$  and  $.39$ ,  $z=4.18$ ). For generic knowledge, NS estimators were more accurate at estimating NS targets (ingroup) than estimating NNS targets (outgroup) ( $r_s = .82$  and  $.75$ ,  $z=7.55$ ); NNS estimators were more accurate at estimating NNS targets (ingroup) than estimating NS targets (outgroup) ( $r_s = .48$  and  $.36$ ,  $z=3.72$ ). For humor-relevant knowledge, NS estimators were more accurate at estimating NS targets (ingroup) than estimating NNS targets (outgroup) ( $r_s = .83$  and  $.61$ ,  $z=13.68$ ); however, NNS were equally inaccurate at estimating NNS targets (ingroup) and NS targets (outgroup)'s humor-relevant knowledge ( $r_s = .35$  and  $.33$ ,  $p=.28$ ). Results

suggested that apart from NNS's estimates of humor-relevant knowledge, participants were more accurate at estimating the knowledge of their cultural ingroups than that of outgroups. H3a was supported and H3b was partially supported. Additionally, NS could estimate NNS's knowledge more accurately than the latter themselves could (e.g.,  $r_s = .76$ , and  $.52$ ,  $z = 12.84$ ;  $r_s = .75$ , and  $.48$ ,  $z = 13.76$ ;  $r_s = .61$ , and  $.35$ ,  $z = 10.50$ ) across all three types of knowledge.

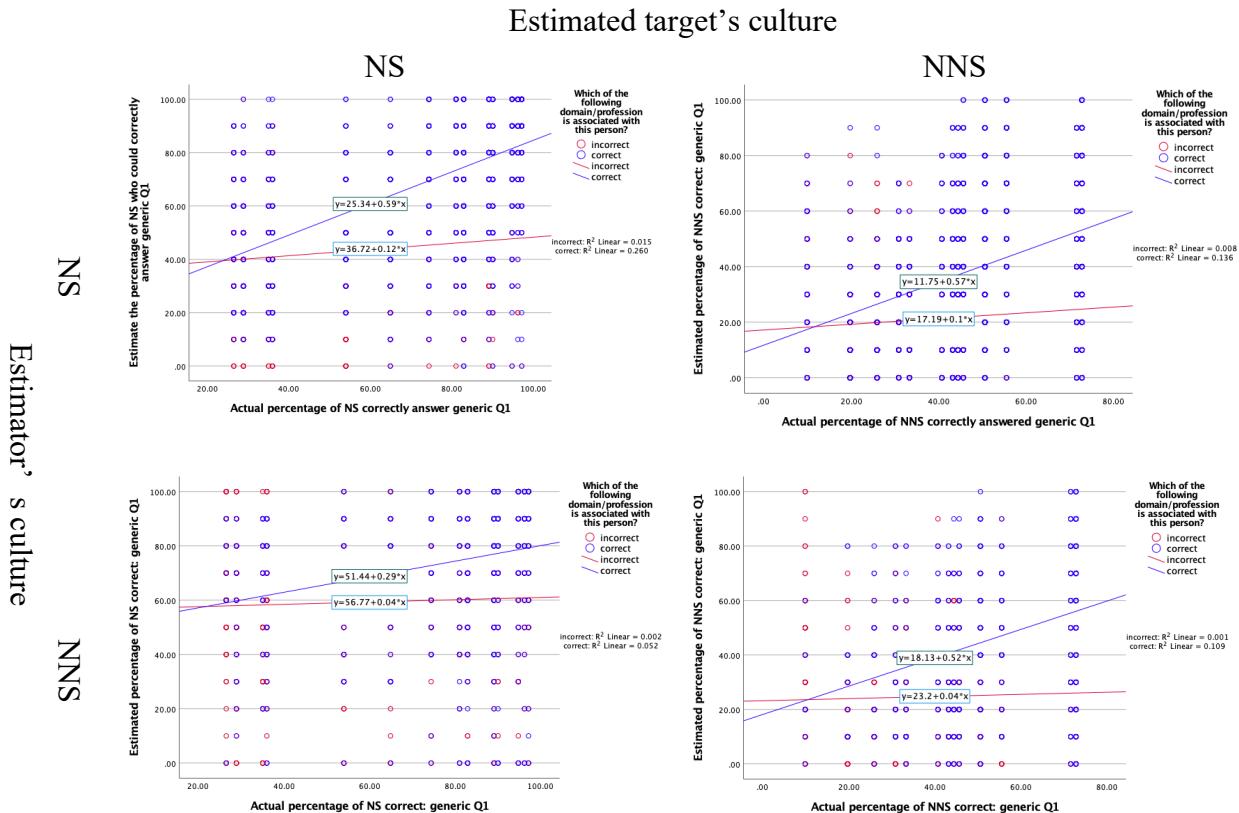
To test whether the estimate accuracy interacts with estimator's own knowledge, correlation coefficients between individuals' estimates of other's knowledge and the actual percentages correct were calculated separately for those who correctly answered the questions and those who didn't (represented as separate regression lines, see Figures 7-9).



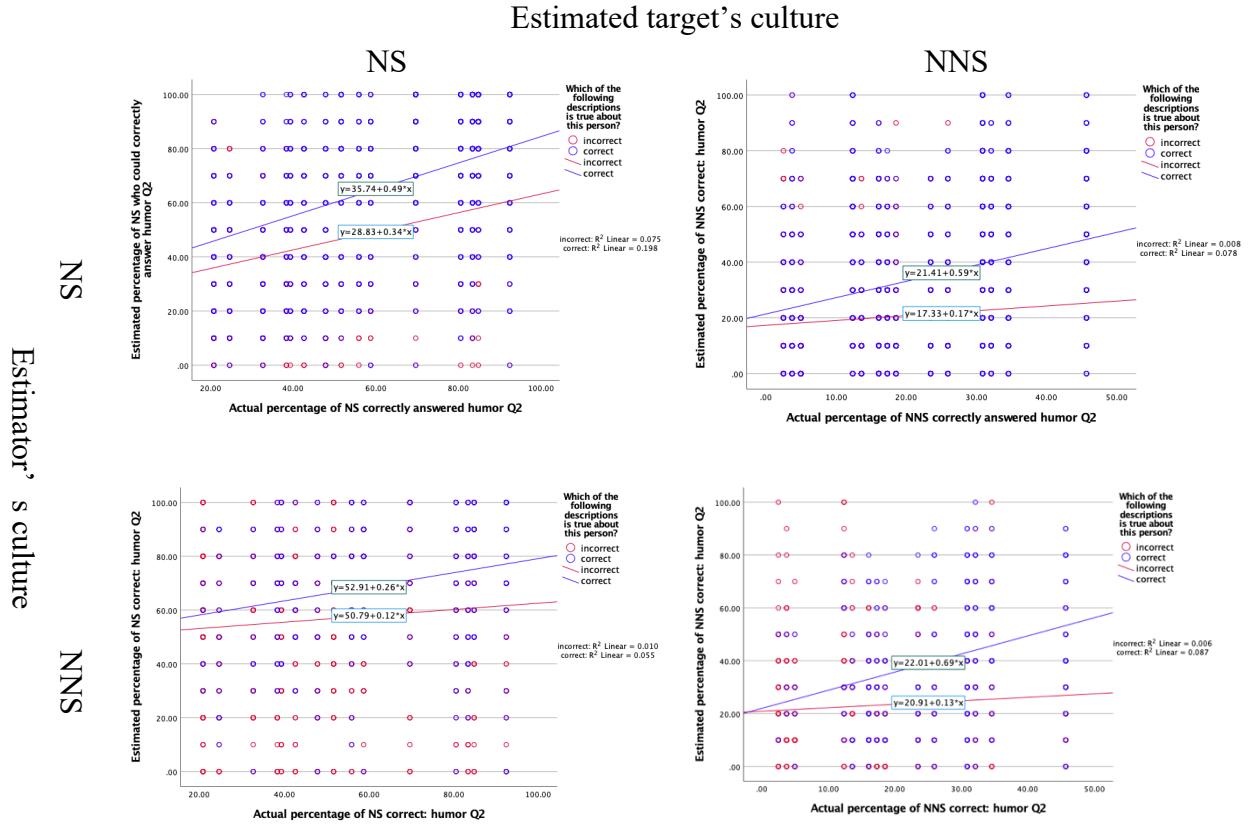
**Figure 7. Estimate of the Percentage of Others Who Could Correctly Name the Public Figures versus Actual Percentage of the Estimated Target Culture Who Correctly Named Them (Rows Represent Estimated Target's Culture, Columns Represent Estimator's Culture, Regression Lines**

**Represent the Best Fit to Each Set of Estimates Who Could Or Could Not Correctly Name the Public Figures).**

Results suggested that those who possessed the knowledge were more accurate at estimating other's knowledge (regardless of estimator's culture and that of the estimated target), as indicated by the slopes of the regression lines ( $r_s$  for correct >  $r_s$  for incorrect,  $2.67 < z_s < 23.49$ ,  $p < .003$ ) across all types of knowledge and all tabulations of estimator/estimated target's culture.



**Figure 8. Estimate of the Percentage of Others Who Could Correctly answer the generic question versus Actual Percentage (Rows Represent Estimated Target's Culture, Columns Represent Estimator's Culture, Regression Lines Represent the Best Fit to Each Set of Estimates Who Could Or Could Not Correctly answer the generic question).**



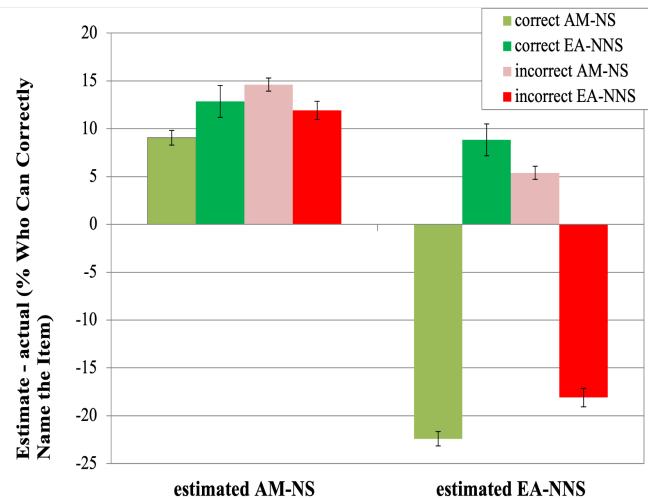
**Figure 9. Estimate of the Percentage of Others Who Could Correctly answer the humor question versus Actual Percentage (Rows Represent Estimated Target's Culture, Columns Represent Estimator's Culture, Regression Lines Represent the Best Fit to Each Set of Estimates Who Could Or Could Not Correctly answer the humor question).**

### Direction of estimate error

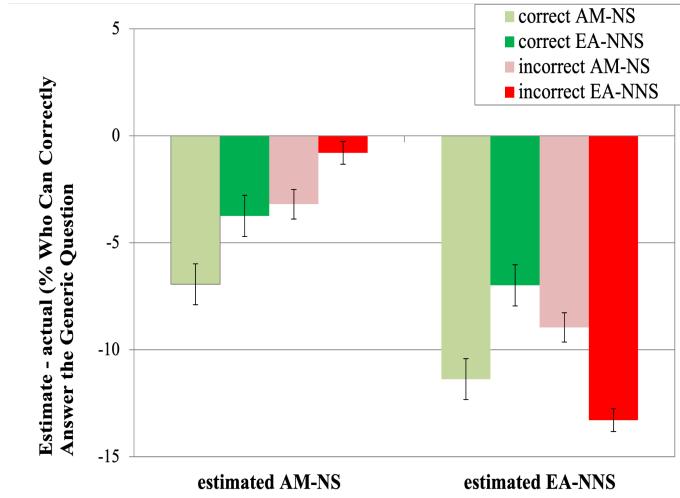
To test H2b and answer RQ2 and RQ3 about over- or underestimation, I conducted a series of 2 (estimators' culture) by 2 (estimated target's culture) by 2 (estimator's own knowledge) Mixed Model ANOVA on the direction of errors.

For the direction of error for name knowledge (see Figure 10), there was no significant main effect of estimators' own knowledge ( $F [1, 8176.79] = 2.64, p = .10$ ), but there was a significant interaction between estimator's culture and estimator's own knowledge ( $F [1, 8176.79] = 332.76, p < .001$ ). NS who could not correctly name the public figure significantly overestimated other's knowledge ( $M=10.00, SE=.57$ ), and NS who could correctly name the item significantly

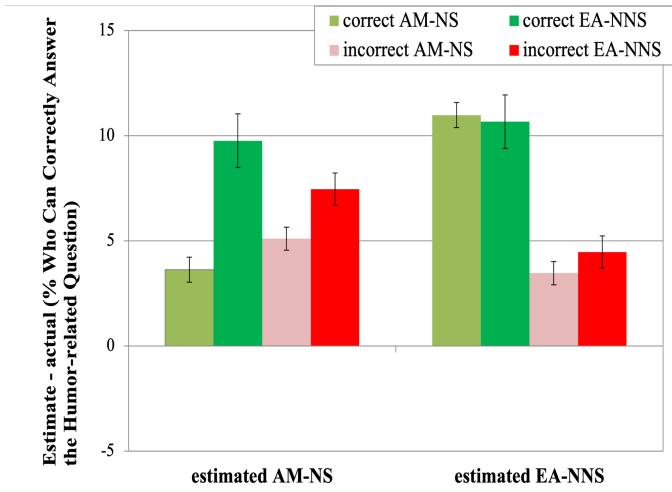
underestimated other's knowledge ( $M=-6.67$ ,  $SE=.62$ ). NNS who could not correctly name the items significantly underestimated other's knowledge ( $M=-3.09$ ,  $SE=.81$ ), and NNS who could correctly name the item significantly overestimated other's knowledge ( $M=10.86$ ,  $SE=1.36$ ). Moreover, there was a significant three-way interaction between estimator's own knowledge, estimator's culture, and the estimated target's culture ( $F [1, 6481.58] = 365.26$ ,  $p < .001$ ). NNS's knowledge of the names of the public figures was significantly underestimated by unknowledgeable NNS ( $M=-18.09$ ,  $SE=.96$ ) and knowledgeable NS ( $M=-22.41$ ,  $SE=.75$ ), and overestimated by unknowledgeable NS ( $M=5.39$ ,  $SE=.69$ ) and knowledgeable NNS ( $M=8.85$ ,  $SE=1.67$ ). NS's knowledge was overestimated by all participants regardless of their own knowledge and cultural group.



**Figure 10. Mean Estimate-Minus-Actual Percentage Who Could Correctly Name the Public Figures, by estimator's cultural group by estimated target by estimator's own knowledge (error bars represent standard error of the mean).**



**Figure 11. Mean Estimate-Minus-Actual Percentage Who Could Correctly Answer the Generic Questions About the Public Figures, by estimator's cultural group by estimated target by estimator's own knowledge (error bars represent standard error of the mean).**



**Figure 12. Mean Estimate-Minus-Actual Percentage Who Could Correctly Answer the Humor-Related Questions About the Public Figures, by estimator's cultural group by estimated target by estimator's own knowledge (error bars represent standard error of the mean).**

For direction of error for generic knowledge (see Figure 11), there was no significant main effect of estimators' own knowledge ( $F [1, 8672.85] = 1.33, p=.25$ ). There was a significant three-way interaction between estimator's own knowledge, estimator's culture, and the estimated target's culture ( $F [1, 6584.61] = 17.96, p < .001$ ). While both cultural groups' generic knowledge tended to be underestimated regardless of the estimators' own knowledge and cultural group, NS

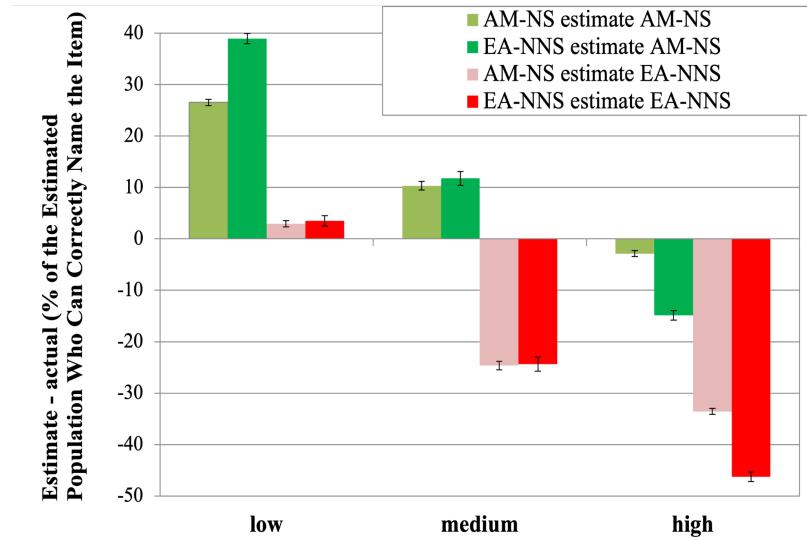
who could correctly answer the generic questions tended to further underestimate other's knowledge than those who could not, except for East Asian NNS estimating their ingroups.

For direction of error for humor-related knowledge, there was a significant main effect of estimators' own knowledge ( $F [1, 7761.89] = 31.43, p < .001$ ). Those who could correctly answer the humor-related questions tended to further overestimate others' knowledge ( $M=8.76, SE=.56$ ) than those who couldn't ( $M=5.12, SE=.39$ ). There was a significant interaction between estimator's and estimated target's culture ( $F [1, 5163.93] = 15.83, p < .001$ ). While overestimations for NNS targets did not differ significantly by estimator's culture ( $M=7.22, 7.56, SE=.42, .76$  by NS and NNS estimators respectively), NS's overestimations of their cultural ingroup were significantly smaller ( $M=4.36, SE=.42$ ) than NNS overestimated NS ( $M=8.61, SE=.76$ ). There was also a significant interaction between estimated target's culture and estimator's own knowledge ( $F[1, 6472.26]=39.32, p < .001$ ), while overestimation for NS did not differ significantly for those who could or could not correctly answer the humor-related questions ( $M=6.69, 6.28, SE=.70, .47$  respectively), overestimation for NNS was significantly larger for those who could correctly answer the humor-related questions ( $M=10.21, SE=1.01$ ) than those who could not ( $M=3.96, SE=.47$ ).

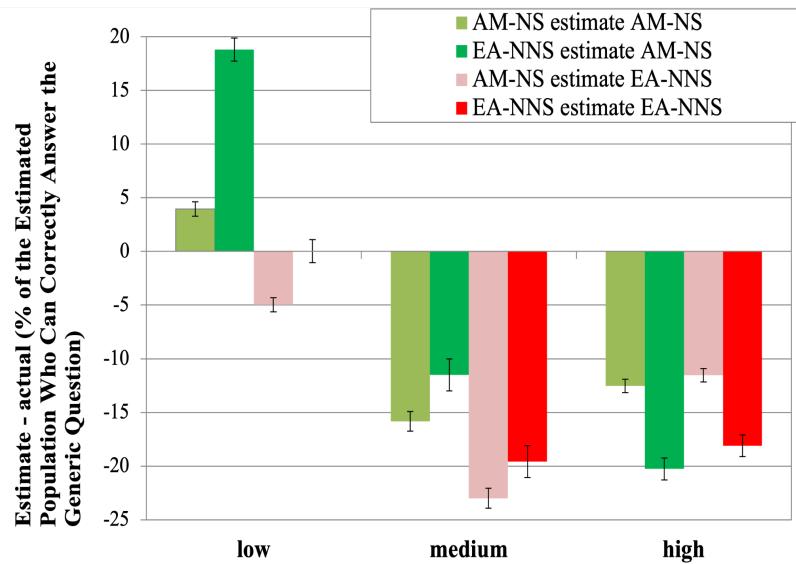
To examine how knowledge commonality interacted with over- or underestimation and the estimator and estimated target's cultural group, I conducted a series of 2 (estimators' culture) by 2 (estimated target's culture) by 3 (item commonality: low <20%, medium 40-60%, high >80%) Mixed Model ANOVA on the direction of errors.

For direction of error for name knowledge, there was a significant main effect of the estimated target's cultural group ( $F [1, 4759.51] = 6507.90, p < .0001$ ). American NS were significantly overestimated ( $M=11.64, SE=.42$ ) and East Asian NNS were significantly

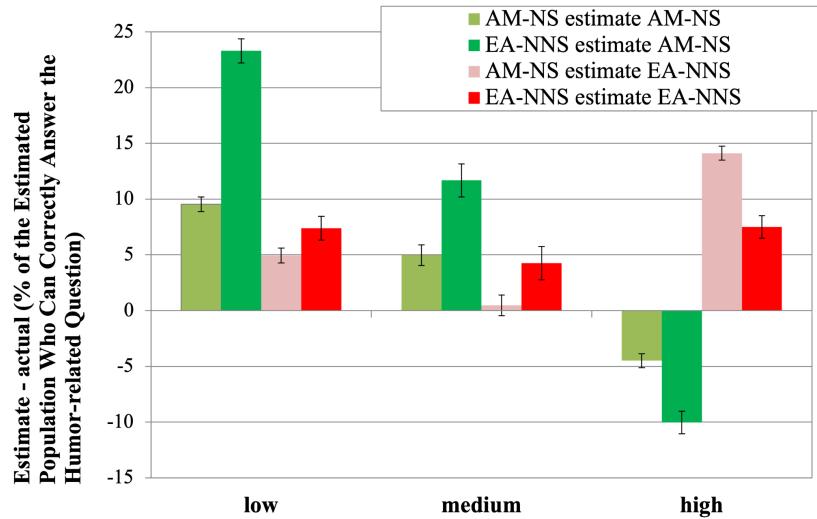
underestimated ( $M=-20.40$ ,  $SE=.42$ ). There was a significant main effect of estimators' cultural group ( $F [1,2257.43] = 5.30$ ,  $p = .02$ ). East Asian NNS tended to further underestimate others' knowledge ( $M=-5.22$ ,  $SE=.62$ ) than American NS did ( $M=-3.54$ ,  $SE=.38$ ). There was a significant main effect item commonality ( $F [2, 9023.12] = 2856.75$ ,  $p < .0001$ ). While low commonality public figures were significantly overestimated ( $M=17.99$ ,  $SE=.47$ ), medium commonality items were significantly underestimated ( $M=-6.73$ ,  $SE=.65$ ), and highly common items underestimated even further ( $M=-24.40$ ,  $SE=.46$ ,  $p < .001$ ). There was a significant three-way interaction between the estimator's cultural group, the estimated target's cultural group and item commonality ( $F [2, 6403.04] = 19.28$ ,  $p <.001$ ). For low commonality items, American NS's knowledge was significantly overestimated by their cultural ingroups ( $M=26.54$ ,  $SE=.61$ ) and to a greater extent by East Asian NNS ( $M=38.95$ ,  $SE=.98$ ), while estimates for East Asian NNS's knowledge was not significantly biased by both ingroups and outgroups ( $M_s=2.96, 3.50$ ,  $SEs=.61, .98$ ). For medium commonality items, American NS's knowledge was significantly overestimated by both groups ( $M_s=10.32, 11.76$ ,  $SEs=.84, 1.36$ ). For highly common items, even though all estimates were lower than the actual percentages, American NS's estimates of their ingroups' knowledge was not significantly biased ( $M=-2.86$ ,  $SE=.58$ ), but East Asian NNS significantly underestimated the percentage of American NS who could correctly name the highly common public figures ( $M=-14.88$ ,  $SE=.93$ ). East Asian NNS's knowledge was significantly underestimated to a greater extent by both their ingroups ( $M=-46.28$ ,  $SE=.93$ ) and outgroups ( $M=-33.57$ ,  $SE=.58$ ).



**Figure 13. Mean Estimate-Minus-Actual Percentage Who Could Correctly Name the Public Figures, by estimator's cultural group by estimated target by knowledge commonality (error bars represent standard error of the mean).**



**Figure 14. Mean Estimate-Minus-Actual Percentage Who Could Correctly Answer the Generic Questions About the Public Figures, by estimator's cultural group by estimated target by knowledge commonality (error bars represent standard error of the mean).**



**Figure 15. Mean Estimate-Minus-Actual Percentage Who Could Correctly Answer the Humor-Related Questions About the Public Figures, by estimator's cultural group by estimated target by knowledge commonality (error bars represent standard error of the mean).**

For direction of error for generic knowledge, there was a significant main effect of the estimated target's cultural group ( $F [1,4628.59] = 217.47, p < .001$ ). American NS were underestimated to a lesser extent ( $M=-6.23, SE=.45$ ) than East Asian NNS ( $M=-12.86, SE=.45$ ). There was a significant main effect of estimators' cultural group ( $F [1,2400.48] = 8.27, p = .004$ ). American NS tended to further underestimate others' knowledge ( $M=-10.65, SE=.41$ ) than East Asian NNS did ( $M=-8.44, SE=.65$ ). There was a significant main effect item commonality ( $F[2, 8945.87]=673.59, p < .001$ ). While low commonality public figures were slightly overestimated ( $M=4.45, SE=.51$ ), medium commonality items were significantly underestimated ( $M=-17.48, SE=.70$ ) even further than highly common items ( $M=-15.61, SE=.49, p = .02$ ). There was a significant interaction between estimated target's cultural group and item commonality ( $F [2, 6449.68] = 109.12, p < .001$ ). For low commonality items, American NS's knowledge was significantly overestimated ( $M=11.37, SE=.63$ ) whereas East Asian NNS's knowledge was slightly underestimated ( $M=-2.47, SE=.63$ ). While American NS's generic knowledge about highly common items were underestimated to a greater extent ( $M=-16.40, SE=.60$ ) than medium

commonality items ( $M=-13.67$ ,  $SE=.88$ ), East Asian NNS's generic knowledge about medium commonality items were underestimated to a greater extent ( $M=-21.29$ ,  $SE=.88$ ) than highly common items ( $M=-14.82$ ,  $SE=.60$ ). There was a significant interaction between the estimator's cultural group and item commonality ( $F [2, 8495.87] = 95.51$ ,  $p < .001$ ). For low commonality items, while American NS's estimates were not significantly biased in either direction ( $M=.51$ ,  $SE=.54$ ), East Asian NNS significantly overestimated other's knowledge ( $M=9.41$ ,  $SE=.87$ ).

For direction of error for humor-related knowledge, there was no significant main effect of the estimated target's cultural group ( $F [1,4623.76] = 1.96$ ,  $p = .16$ ). There was a significant main effect of estimators' cultural group ( $F [1,2339.53] = 9.79$ ,  $p = .002$ ). East Asian NNS tended to further overestimate others' knowledge ( $M=7.35$ ,  $SE=.66$ ) than American NS did ( $M=4.92$ ,  $SE=.41$ ). There was a significant main effect item commonality ( $F [2, 8962.30] = 120.25$ ,  $p < .001$ ). Low commonality public figures were significantly more overestimated ( $M=11.29$ ,  $SE=.51$ ) than medium commonality items ( $M=5.34$ ,  $SE=.70$ ) than highly common items ( $M=1.77$ ,  $SE=.49$ ). There was a significant interaction between estimated target's cultural group and item commonality ( $F [2, 6406.52] = 419.52$ ,  $p < .001$ ). While American NS's humor-related knowledge about highly common items were significantly underestimated ( $M=-7.27$ ,  $SE=.60$ ), East Asian NNS's knowledge about highly common items were significantly overestimated ( $M=10.81$ ,  $SE=.60$ ). There was also a significant three-way interaction between the estimator's cultural group, estimated target's cultural group and item commonality ( $F [2, 6406.52] = 12.30$ ,  $p < .001$ ). For highly common items, American NS underestimated their cultural ingroup's humor-related knowledge ( $M=-4.50$ ,  $SE=.63$ ) and significantly overestimated their cultural outgroup ( $M=14.12$ ,  $SE=.63$ ); East Asian NNS underestimated their cultural outgroup's ( $M=-10.05$ ,  $SE=1.01$ ) and overestimated ingroups' knowledge about highly common items ( $M=7.51$ ,  $SE=1.01$ ).

## **Discussion**

The purpose of Study 2 was to examine how accurately individuals can estimate the knowledge of their cultural ingroups and outgroups, especially the knowledge that American humor often draws on. The study found that NS were more accurate at estimating both their cultural ingroup and outgroup's knowledge of American public figures (across three types of knowledge) than NNS, suggesting a stronger sensitivity to the social distribution of the knowledge that is specific to American culture. On the other hand, NNS had relatively less clue about whether the knowledge about certain public figures were common for NS and for their fellow NNS to know, despite a slightly better idea of their ingroup's knowledge. NS's estimations of NNS's knowledge were more accurate than the latter themselves estimated their cultural ingroups.

Even for NNS who possessed the knowledge, their estimates for both NS and NNS were only moderately accurate ( $.40 < R_s < .50$ ), not to mention those who did not know the correct answers ( $R_s < .30$ ). Whereas for NS, even those who did not possess the knowledge produced quite accurate estimates of their cultural ingroups' humor-related knowledge ( $R=.71$ ). This could result from NS's consumptions of or exposures to similar media contents. Even if one is not particularly interested in or familiar with certain domains or certain public figures, the fact that certain public figures frequently or rarely appear in the media gives one some clue as to their popularity and recognizability for other media consumers. For knowledgeable NNS, on the other hand, they might have learned about or happened to be familiar with certain American public figures, perhaps from international news, from watching certain films, who may or may not be popular for NS. The discrepancy between knowledgeable NNS and unknowledgeable NS's estimation accuracy suggests that assumptions about the social distribution of knowledge might be shared only among the natives of the knowledge, and not shared across cultures (or across other social categories).

NS's estimates of NNS's knowledge might have been simply a downward adjustment from their estimates of NS's knowledge as their best guess (Davis et al., 1986; Nickerson et al., 1987; Tversky & Kahneman, 1974). What NS are sensitive to is the relative commonality of the knowledge, not who would possess the knowledge. Whoever the estimated population is, the relative distribution of the knowledge would remain the same. It is possible that the natives of the knowledge might have transferred their sensitivity to the social distribution of the knowledge to nonnative outgroups. In other words, NS knew what knowledge was common and what was niche for other NS, and assumed the same pattern for NNS, which happened to hold for the most part, except for humor-related knowledge about the public figures highly common for NS to know.

Despite their sensitivity to other's knowledge, NS were the least accurate at estimating NNS's humor-related knowledge ( $R=.61$ ) and tended to overestimate it, especially for items that were highly common for their cultural ingroup. While these highly common items tended to be underestimated for NS, were rather overestimated for NNS by NS (see Figure 15). It is conceivable that NS's humor tends to draw on the knowledge that is deemed very common for NS and thus must be relatively common for NNS as well (when in fact is not) would likely fail for NNS.

It appears that the social consensus in social distribution of knowledge might be independent of "social" considerations. In other words, it might not matter who one has in mind when judging whether the person possesses the knowledge. Rather, it is the relative frequencies of encountering or being exposed to the knowledge that serves as an essential point of inference, which is generally shared within a certain population, but may or may not be shared for members of other social categories. One way to test whether this is true is to pool the kind of knowledge, the distribution of which holds for one population but not for the other.

# Chapter 5: General Discussion

The goal of this dissertation was to provide a systematic understanding of the challenges in sharing humor across linguistic and cultural boundaries. Key research questions driving this inquiry are: What are the challenges for East Asian NNS to share American NS's humor? What creates these challenges to begin with? Is it because NS don't tailor their humor to NNS knowledge? Is it because NS don't know what NNS don't know? To answer these questions, I first conducted in-depth interviews with NNS to identify common sources of confusion in understanding NS humor and the interactional challenges that arise when humor is not understood. Results from Study 1 (Chapter 3) suggested that a misalignment of NS and NNS's assumptions about each other's knowledge about American culture might account for both why NS humor failed for NNS and for the interactional challenges. These results informed the design of a second study (Chapter 4) to further explore whether NS and NNS can accurately estimate each other's knowledge about American culture. In the rest of this chapter, I first summarize the key results, and then discuss how they extend current understanding of conversational grounding and perspective taking and how they inform the design of tools to facilitate humor interactions across linguistic and cultural boundaries.

## **Summary and discussion of results**

Chapter 3 (Study 1) presented an interview study with 28 East Asian NNS, investigating their perceived sources of confusion in understanding NS humor and the interactional challenges in responding to such NS humor. Study 1 identified that NNS's lack of referential knowledge with respect to American culture (e.g., public figures, media content, sociocultural knowledge) was the primary source of confusion in understanding NS humor. NNS felt that this was because NS wrongly assumed that NNS shared this cultural knowledge when creating the humor. NNS also

reported that they laughed along and withheld clarification requests when they encountered incomprehensible humor, for fear of appearing ignorant for not knowing what they assumed that all NS would know and thus they were supposed to know.

Based on the most common source of confusion identified in Study 1 (Chapter 3), a set of 16 American public figures in varying domains and of different levels of recognizability were pooled for Study 2 (Chapter 4), which examined NS and NNS's ability to estimate each other's knowledge. It was found that NS who themselves knew the knowledge could accurately estimate the percentage of NNS who would know, though not as accurately as they could estimate the knowledge of their cultural ingroup. More detailed analyses suggested that NS tended to overestimate the percentage of NNS who would know humor-related knowledge about public figures that were widely known by NS. This provides one possible explanation why NNS in Study 1 reported that they often missed NS humor because it drew on the referential knowledge unfamiliar to NNS. When joking around, NS were likely to base their humor on knowledge that was widely shared among NS, as was evidenced by the fact that other NS in the interaction laughed. NS might have assumed that the knowledge would be relatively common for cultural outgroups to know as well, whereas in fact, only less than half of NNS knew the most common humor knowledge.

Because in many of the accounts related by NNS in Study 1, humor took place in group settings where the NNS was not the only audience member the NS's humor was designed to reach, another possibility might be that NS only considered the mutual knowledge shared with a subset of the audience who are ingroup members. Once the subset of audience members laughs at the humor, the speaker's current purpose for grounding is accomplished. As some NNS noted, if someone in the group laughed then they didn't need to laugh. Admittedly, the data in Study 1 did

not include enough cases of dyadic conversations involving humor to speak about NS's assumptions of NNS's humor-related knowledge. This scarcity in the data might nevertheless suggest that NNS experienced fewer challenges in understanding NS's humor in one-on-one settings.

Yet another possibility is that NS did not incorporate such awareness into account when constructing the humorous message, even though they were aware of NNS' limited knowledge. This possibility seems to align with Fussell and Krauss (1992)'s finding that speakers' assumptions of their addressees' knowledge only had weak effects on their referential terms. Despite knowing that certain referential expressions were less identifiable to others, participants in their study still used them without additional information. The authors suspected that this might be due to the interactive nature of the conversation that allowed the speakers to adjust their message according to the listener's feedback so they could rely less on prior assumptions. This potential effort-saving strategy, however, is risky in humorous contexts, because the way humor works does not afford the back-and-forth interaction using try-makers, installment phrases (Clark & Wilkes-Gibbs, 1986) or pre-sequences (Clark, 1996) that are common in referential communication because they will spoil and kill the humor.

A final possibility is that although NS could estimate other's knowledge fairly accurately when asked to do so in Study 2, they might not actually have made the assessment of the audience's knowledge beforehand to take their perspective when cracking the humor. After all, conversational humor is often spontaneous (Norrick, 1993), and speakers might not have the time to make a conscious effort to think about common ground before saying something funny in the context at an opportune timing. This would be consistent with Horton and Keysar (1996)'s finding that while

common ground was incorporated into the construction of referential messages under no time constraint, it was not considered when speakers were under time pressure.

### **Theoretical implications**

While previous research has demonstrated that individuals are sensitive to the differences in the social distribution of knowledge that are due to category membership (e.g., women are more familiar with kitchen utensils than men) (Fussell & Krauss, 1992), few has been able to answer whether individuals are more accurate at estimating the knowledge of their ingroups than that of outgroups (e.g., are women better at estimating women's knowledge of kitchen utensils than estimating that of men?). Study 2 of this dissertation extends current literature on perspective-taking across social categories, by providing a cross-category-membership analysis that suggested that both NS and NNS's estimates of the knowledge of their cultural ingroup were more accurate than that of outgroup.

This finding shed light on how the potential processes of perspective-taking might be different for ingroup and outgroup members, and on the constraints of taking the perspective of an outgroup member. Previous studies have suggested several heuristics by which individuals infer about what others might know. First is anchoring and adjustment (Davis et al., 1986; Nickerson et al., 1987; Tversky & Kahneman, 1974), where people reason from their own cognitive process (e.g., by recalling from their own lack of knowledge) (Brown & Dell, 1987; Hinds, 1999) and then adjust up or down. The finding that individuals are more accurate at estimating their ingroup's knowledge appears to lend evidence to this egocentric heuristic where estimation of others departs from one's own perspective. Using one's own memory as a basis can be problematic for predicting what outgroup members know, as the process of acquiring the knowledge might be quite different for different cultural groups (e.g., media exposure). Therefore, reasoning from one's own cognitive

process is more likely to lead to bias and misjudgment for perspective-taking across social categories.

Another heuristic people might use to infer about other's knowledge is based on their experience with a small number of individuals (Nisbett & Kunda, 1985). People may use a few people they know as models for knowledge judgement for the category those people belong to (Fussell & Krauss, 1992). This heuristic poses both a challenge and an opportunity for perspective-taking across social categories. It is a challenge for social categories that lack communication and contact and a blessing for those who maintain close contact. Bromme and colleagues (2001) suggested that practical experts were better than theory experts at estimating laypersons' knowledge in that the former gathered more experience interacting with laypersons in their expert roles while the latter did not. This dissertation study also lends support to the role of interpersonal closeness with outgroups in better perspective-taking. For NS estimators, every unit of increase in interpersonal closeness with NNS, their estimation accuracy of NNS's humor-relevant knowledge increased by one percent.

The last heuristic people might use to infer about other's knowledge is by inferring from other's likely behaviors (Fussell & Krauss, 1992; Kahneman & Tversky, 1982). While it is relatively easy for people to imagine a scenario by which their ingroup members could acquire certain knowledge in their day-to-day life, generating such a scenario for an outgroup can be challenging. For instance, can NS imagine what media contents NNS normally consume to assess their likelihood of knowing certain public figures? People may make better use of such simulation heuristic with greater experience with members of the outgroup, as the ease with which generating a quotidian scenario for them would increase.

Taken together, findings from this dissertation suggest that perspective-taking across social categories can be challenging and can be constrained by individuals' egocentric view and limited experience with outgroup members. These challenges and constraints may have caused NS humor that predominantly draws on the knowledge specific to American culture to fail for NNS.

### **Design implications**

Findings from this dissertation pointed out several directions where future technology could step in to facilitate the humorous interaction across linguistic and cultural boundaries. I lay out these directions in chronological order in which the grounding of humor takes place: identifying common grounding and updating common ground.

Technologies can step in at the stage of identifying common ground before humor even happens. Findings from this dissertation suggested that American NS tended to overestimate East Asian NNS's humor-related knowledge that is highly common for and known by a majority of Americans, resulting in their humor often eluding NNS. To align NS's assumptions with NNS actual knowledge, a cultural reference index can be developed through crowdsourcing and made available for NS to realize what they deem common may not be so for other populations. For instance, search engines can generate an index of cultural references based on frequency of look-ups by NNS. Frequently looked-up references may suggest to NS that NNS may not be familiar with the references and therefore they should be cautious when using them in their humor. When looking up the references, NNS contributors could choose to provide the context where they encountered the reference (e.g. conversation, gaming, memes), the characteristics of the person who brought up the reference (e.g. demographics, subcultures). Other NNS could resort to this index to learn about the cultural references they are likely to encounter. NS contributors may also help improve the index to get an accurate estimate of the number of knowers and their demographic characteristics (e.g. teenagers, players of certain game, users of certain platform), the origin and

context of the reference, the time it starts to be popular, etc., as these are important factors for NNS to judge if the reference is important to know. With this nuanced information, NNS learning about cultural references can be more targeted. For instance, NNS could choose to thoroughly study generic references and gloss over those niche references just to heuristically know it's niched the next time they encounter one.

At the stage of updating common ground in the ongoing conversation, the above-mentioned index can be used to flag potential lack of understanding or failure of humor in real time, such that the NS who is to make such reference in their humor with NNS could initiate self-correction and explanation in time to avoid further miscommunication; or proactively, to provide context and required knowledge beforehand. The reference index could also be integrated into a conversation agent or a personal agent for NNS that discreetly provides information about cultural references on an as-needed basis. This tool might also provide information such as the likelihood of NS knowing the reference, which the NNS could use to decide whether to request clarification. Additionally, the potential face threats and negative social implications of requesting clarification in humorous contexts (found in Study 1) can be addressed by using a non-human agent as well. For instance, the agent could be preprogrammed to utter playful remarks that pose no threat to the humor speaker's face (e.g., not sounding like the speaker made a bad joke), remarks that NNS reported to be beyond their capability, to suggest the agent's lack of understanding of certain referential knowledge. As such, the face threat to the speaker is cancelled and that to the NNS listener is transferred to the agent, while the common ground regarding the reference between NS and NNS is mediated by the agent but updated properly. This is expected to work in a similar fashion that my other tool (Duan et al., 2021) has.

## **Limitations and future work**

This dissertation has several limitations, which suggests potential directions for future work. First, this dissertation research has focused on the challenges encountered by NNS in conversational humor with American NS. The findings from this dissertation, such as the predominant source of confusion being lack of referential knowledge regarding American public figures, may not apply to the challenges of understanding nonverbal and visual forms of humor such as satirical cartoons.

Second, individual's knowledge about certain cultural reference used in humor may not be all-or-nothing (as how it was dichotomized in this dissertation) but might be graded. For instance, people may not be able to correctly spell out the name of the public figure but the public figures they couldn't name might be of various degrees of familiarity. It might be worthwhile for future work to use other measures to test the knowledge (e.g., feeling of knowing, familiarity, name recognition instead of recall), which might allow for a nuanced view of how people reason about other's knowledge.

Third, the specific public figures used as stimuli in Study 2 were pretested only with American NS. While they covered a wide range of commonality for NS, the overall social distribution of the knowledge of them appeared to be the same for both NS and NNS. This has made it difficult to rule out the possibility that NS had adjusted their estimates for ingroups downward to form the estimates for outgroups. Future work should focus on the public figures that are equally common for NS to know, with the commonalities of which vary among NNS, to tease out this possibility.

Fourth, the sample used in this dissertation research was limited in many ways. Participants were all college students at a prestigious and relatively diverse university. Their education and the inclusive atmosphere might have affected the humor shared in daily interactions such that no racist

or sexist humor was mentioned, which may not apply to other cross-cultural populations. The age group of the participants may also have affected the content of the humor that predominantly relates to popular culture. The fact that American NS participants had not had much overseas experience might have affected their ability to take the perspective of others living in a foreign country. Lastly, the cultural backgrounds of NNS participants were limited to East Asian countries and regions. Their perceived challenges of understanding American humor might not apply to that perceived by NNS from other countries who may be more exposed to American culture.

## Chapter 6: Conclusion

This dissertation presented two studies that jointly provided an in-depth understanding of the challenges of humorous communication across linguistic and cultural boundaries. Through semi-structured interviews with 28 East Asian NNS, the first study uncovered that lack of referential knowledge with respect to American popular culture and the like was weighed the most by East Asian NNS as the dominant source of confusion in intercultural humor across various contexts, and that the potential misalignment of the assumptions of one another's knowledge between NS and NNS might account for both the sources of confusion (NS potential overestimation of NNS's knowledge) and the interactional challenges in grounding humorous messages for NNS (NNS potential overestimation of NS's knowledge). These findings informed the second study, in which I examined and verified both American NS and East Asian NNS's assumptions of one another's knowledge, especially the kind of knowledge that American humor often draws on, through an online experiment. The second study revealed that a misalignment of American NS and East Asian NNS's assumptions about one another's knowledge exists. Specifically, American NS tended to overestimate East Asian NNS's humor-related knowledge, especially the knowledge that was highly common for and known by a majority of American NS. They assumed that the common knowledge for their cultural ingroups must be relatively common for cultural outgroups to know as well. East Asian NNS generally had little clue as to the social distribution of the knowledge about American public figures among either cultural group, and tended to overestimate American NS's knowledge about less known items, which echoes East Asian NNS's reports in the first study that NNS simply assumed the referential knowledge in NS humor was basic and generic knowledge they were supposed to know because an average American would know.

This dissertation has advanced current understandings of intercultural humor by identifying that lack of referential knowledge and difficulties in cross-cultural perspective-taking could lead to challenges in sharing humor across cultures. It opened up a space for developing humor theories that connects the cognitive aspects of humor to the social aspects, by incorporating the mechanism of perspective-taking. Further, this dissertation extended the theory of perspective-taking by showing that individuals can take the perspective of their cultural outgroups to an extent but may be constrained by an egocentric view and by limited experience with outgroup members. Finally, this dissertation proposed a set of design suggestions for future tools to address the challenges of intercultural humorous interactions identified in the dissertation.

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## Appendix A: Interview protocol for Study 1

After introducing the study,

- Ask for permission to audio recording
  - Obtain signature on the consent form
1. Briefly obtain information about major, class year, length of time and experience living in English speaking countries, US, leisure time, friends, experience teaming with NS, working in a lab, office, students organization, etc.
  2. Tell me what came to mind when you saw the topic of the study -- Humor with native speakers? Or who came to mind?
  3. What was it like when that (humor) happened? Can you remember what events led up to it? What was the occasion?
  4. Who (else) were there? How were you (they) involved?
  5. How did they react? What do you think of their reaction?
  6. What did you think and feel then in general?
  7. How would you describe your feeling about the joker, the situation, other people and (or) yourself?
  8. How did you react? What made you want to react that way?
  9. How might you react otherwise if the situation changes in some way?
  10. What made you want to respond like that?
  11. What did it feel like when people around you respond with laughter?
  12. What happened after that?
  13. Has it always been the way you respond to situations like this? How might you respond differently (in a different situation of humor/if it's in your own native language)?

14. What kind of examples can you think from your own lives or observations where a NNS didn't get the humor?

15. What kind of jokes do you think NNS are likely not to understand?

## Appendix B: List of public figures and percentages correct by cultural group for Study 2

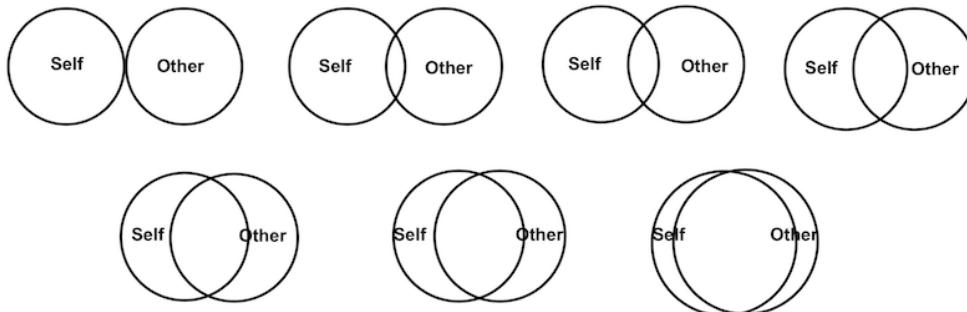
Public Figure	Percentage of American NS Who Knew			Percentage of East Asian NNS Who Knew		
	name	Q1 generic	Q2 humor	name	Q1 generic	Q2 humor
Oprah Winfrey	96.68	97.16	69.67	55.56	72.84	12.35
Bernie Sanders	91.94	96.21	84.83	44.44	72.84	34.57
Simone Biles	85.31	94.79	92.42	29.63	50.62	45.68
Lil X Nas	80.57	89.1	80.57	20.99	72.84	30.86
Olivia Rodrigo	75.36	89.1	83.41	17.28	55.56	30.86
Chrissy Teigen	69.67	82.94	42.65	11.11	44.44	16.05
Tom Brady	66.35	81.04	51.66	16.05	45.68	3.7
Paul Rudd	59.72	90.05	58.77	24.69	71.6	32.1
Anderson Cooper	59.24	82.94	55.92	17.28	50.62	25.93
Mitch McConnell	44.08	74.41	39.34	11.11	43.21	16.05
Colin Jost	26.07	54.03	47.87	8.64	30.86	17.28
Lonzo Ball	25.12	64.93	38.39	13.58	40.74	23.46
Billy Eichner	18.01	36.02	32.7	6.17	33.33	13.58
Marjorie Taylor Greene	16.11	28.91	20.85	4.94	19.75	4.94
Phoebe Bridgers	13.74	26.54	20.85	0	9.88	2.47
Kris Wu (filler)	11.85	47.85	12.92	75.31	87.65	81.48
Park Geun-hye (filler)	6.64	16.67	11.9	48.15	75.31	51.85
Yuzuru Hanyu (filler)	6.16	23.7	8.57	32.1	43.21	25.93
Jeanine Pirro	5.69	35.07	24.64	6.17	25.93	18.52

## Appendix C: Survey questions for Study 2

- Please indicate your familiarity with this public figure
- Name: Please spell out the name of this person:
- Generic question (Q1): Which of the following professions is associated with this person?
- Humor-related question (Q2): Which of the following descriptions is true about this person?

Show the picture of the public figure and the questions again, present the following two sets of questions in random order

- Please estimate the percentage of **Cornell students who were born and raised in the U.S.** you think would be able to: (on a 0-100% scale, 10% interval)
  - provide the correct name,
  - provide the correct answer to Q1,
  - provide the correct answer to Q2
- Please estimate the percentage of **Cornell students who were born and raised in East Asia (e.g., China, South Korea, Japan, etc.)** you think would be able to: (on a 0-100% scale, 10% interval)
  - provide the correct name,
  - provide the correct answer to Q1,
  - provide the correct answer to Q2
- Demographics:
  - What is your year of birth?
  - Which of the following best describes your gender identity?
  - What is your native/first language (or the most fluent language)?
  - Which of the following countries or regions were you predominately raised in?
  - Please indicate your experience (in number of years, 6months=0.5years) living in countries or regions (please specify and order by length of stay) where your native language is not the dominant language. (e.g., 5.5 years, US or 3.5 years, Japan, UK, South Africa)
  - Please indicate your race or ethnicity
  - How often do you interact with individuals whose native language is different from your own?
  - Which picture best describes your (self) relationship with individuals born and raised in the U.S. (other)?



- Which picture best describes your (self) relationship with individuals born and raised in East Asian cultures (other)?

- Please indicate your Class Year and Major (or degree program if grad). E.g., junior, information science; or MPS, engineering; or PhD, communication

**Humor-related questions for each public figure**

Bernie Sanders

Which of the following descriptions is true about this person?

- A. He wore mittens at the Presidential Inauguration
- B. He is a Republican politician
- C. He is portrayed as being too moderate by left-leaning media
- D. He has never run for president himself
- E. I don't know

Mitch McConnell

Which of the following descriptions is true about this person?

- A. He is mocked by the media about his saggy face
- B. Left-leaning media portrays him positively
- C. He confirmed the appointments of judges by Obama
- D. He is known for being an Ohio Senator
- E. I don't know

Marjorie Taylor Greene

Which of the following descriptions is true about this person?

- A. She has been a QAnon supporter
- B. She insisted on the second impeachment of Trump
- C. She is a congresswoman from Texas
- D. Liberal media portrays her positively
- E. I don't know

Chrissy Teigen

Which of the following descriptions is associated with this person?

- A. She was involved in a scandal for cyberbullying and got canceled
- B. She is married to an obnoxious politician
- C. She is very diplomatic on social media
- D. She does not know how to cook
- E. I don't know

Paul Rudd

Which of the following descriptions is true about this person?

- A. People think he never ages
- B. He is portrayed negatively by liberal media
- C. He has a serious personality
- D. He has played Batman

E. I don't know

Billy Eichner

Which of the following descriptions is associated with this person?

- A. He is a gay comedian
- B. He is very modest and restrained
- C. He is the host of Family Feud
- D. He is involved in a lawsuit with Disney
- E. I don't know

Lil Nas X

Which of the following descriptions is associated with this person?

- A. His music video features satan
- B. He does not have much presence on social media
- C. He was involved in a scandal about ...
- D. He does not speak openly about his sexuality
- E. I don't know

Olivia Rodrigo

Which of the following descriptions is associated with this person?

- A. She is famous for her (romantic) emotional songs
- B. She has endorsed Donald Trump
- C. She is not active on social media
- D. She keeps a low profile about her romantic history
- E. I don't know

Phoebe Bridgers

Which of the following descriptions is associated with this person?

- A. She has made a habit of wearing skeleton outfit
- B. Her music video features a stripper pole to hell
- C. She has not been featured in Saturday Night Live
- D. She played Black Widow
- E. I don't know

Anderson Cooper

Which of the following descriptions is associated with this person?

- A. He came out as gay
- B. He speaks openly about his right-leaning political views
- C. He has hosted Saturday Night Live
- D. He is portrayed as incompetent across the board
- E. I don't know

Jeanine Pirro

Which of the following descriptions is associated with this person?

- A. She is on Fox News
- B. She is progressive and is considered a socialist
- C. She has hosted The Tonight Show
- D. She is known for interviewing the royals
- E. I don't know

Oprah Winfrey

Which of the following quotes is associated with this person?

- A. "You get a car"
- B. "I am once again asking"
- C. "Hey look at us"
- D. "I got family"
- E. I don't know

Colin Jost

Which of the following descriptions is associated with this person?

- A. He is a comedian on Saturday Night Live
- B. He came out as gay
- C. He is a Fox News commentator
- D. He is single
- E. I don't know

Simone Biles

Which of the following descriptions is associated with this person?

- A. She quit some of the Olympics events she planned to
- B. She has not been involved in any scandals
- C. She is considered tall as a female athlete
- D. She is free from mental health issues
- E. I don't know

Lonzo Ball

Which of the following descriptions is true about this person?

- A. He is a basketball player for the Chicago Bulls
- B. He is famous for being good at shooting three-pointers
- C. He is a football player for the Patriots
- D. His father used to be a basketball player
- E. I don't know

Tom Brady

Which of the following descriptions is associated with this person?

- A. He kisses his children on the lips
- B. He is famous for playing center in football

- C. He has never been alleged of cheating in games
- D. He has a short but successful career
- E. I don't know

Fillers:

Park Geun-hye

Which of the following descriptions is true about this person?

- A. She was arrested and was charged with bribery
- B. She is from a working class family
- C. She is married to an obnoxious politician
- D. She is South Korea's first female anchor
- E. I don't know

Kris Wu

Which of the following descriptions is true about this person?

- A. He was arrested on suspicion of rape
- B. He was a former member of the K-pop boy band BTS
- C. He has been alleged of cheating in games
- D. He was accused of abandoning two babies in the US
- E. I don't know

Yuzuru Hanyu

Which of the following descriptions is true about this person?

- A. He loves Winnie the Pooh
- B. He is a three-time Olympics champion
- C. He was accused of doping at the Olympics
- D. He is a Short Track Speed Skater
- E. I don't know

## Appendix D: Pictures of stimuli for Study 2

Bernie Sanders



Marjorie Taylor Greene



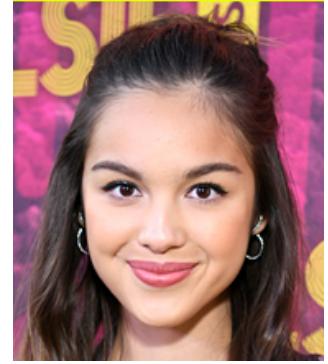
Mitch McConnell



Lil Nas X



Olivia Rodrigo



Phoebe Bridgers



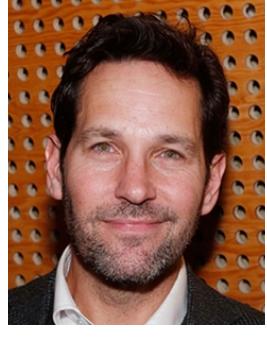
Billy Eichner



Chrissy Teigen



Paul Rudd



Anderson Cooper



Jeanine Pirro



Colin Jost



Oprah Winfrey



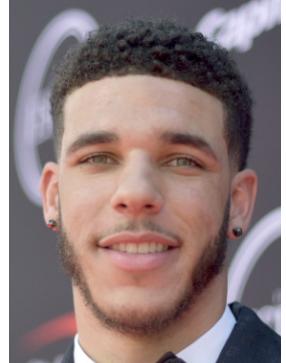
Simone Biles



Tom Brady



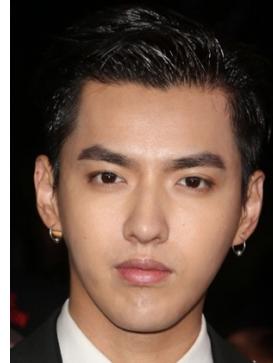
Lonzo Ball (M)



Park Geun-hye



Kris Wu



Yuzuru Hanyu

