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How We Seem "To Be": English- and Spanish-Speaking Children's Susceptibility to the Fundamental Attribution Error and Actor-Observer Bias

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Abstract

Spanish- and English-speaking children's susceptibility to the fundamental attribution error and actor-observer bias was examined. Previous research has revealed that the Spanish verb *estar,* which tends to imply temporary qualities, (in contrast to *ser,* which suggests permanent ones) affects children's reasoning both about real vs. apparent properties and stability of others' psychological characteristics. The present study was interested in discovering whether the fundamental attribution error and actor-observer bias, tendencies to overestimate the influence of situational influences on one's own behavior while providing dispositional attributions for the behavior of others, would be mediated by the existence in Spanish of two forms of the verb *to be*. Children's attributions of themselves and others were observed in both an inference (priming) and story generation task. Data revealed a modest 'dispositional bias' which was greater among English speakers, and correlations between Spanish-speaking participants' uses of *ser* in conjunction with dispositional attributions. Possible explanations of the study's findings and directions for further research are discussed.

How We Seem "To Be": English- and Spanish-Speaking Children's Susceptibility to the Fundamental Attribution Error and Actor-Observer Bias

Lev Vygotsky called it "one of the most complex problems of psychology" (Vygotsky, 1962, p. xix). Herodotus puzzled over it as he watched the hands of Egyptians moving across sheets of papyrus from right to left instead of the Greek left-to-right style, wondering if this difference meant that the Egyptians had a different way of thinking about the world (Hunt & Agnoli, 1991). Although other Greek philosophers believed that thought was universal, Herodotus' ideas may have been more in line with those of 19th-century German Romantic thinkers, who claimed that each language represented a characteristic worldview (Slobin, 1996; Whorf, 1956). A generation later, Ernst Cassirer called language "a direct manifestation of thought," arguing that one couldn't truly know a concept that couldn't be verbalized in one's native language (Brown & Lenneberg, 1954, p. 454). Even Albert Einstein weighed in, citing language as a key factor in mental development (Hunt & Agnoli, 1991). The idea has also found expression in our popular culture, from musings over supposed dozens of words for 'snow' in the Eskimo language (which, incidentally, is a myth) to George Orwell's novel *1984*, in which citizens are rendered unable even to think rebellious thoughts, because the words representing them have been eliminated from their lexicon (Brown & Lenneberg, 1954; Pinker, 1994). Do the languages we speak shape the way we think? If they did, how would these influences manifest themselves in our everyday lives? While these questions may never be fully answered (and indeed, language seems too complex an entity to be understood even within the domain of any one discipline), they have been the

source of academic inquiry, scathing disagreement, and mere curious pondering for some time, and surely will be for time to come.

Historical Foundations of the Debate: Does Language Shape Thought?

Ideas about the connection between language and thought found crystallization most famously in the writings of Benjamin Lee Whorf, an American chemical engineer-turned-linguist who conducted extensive research on North American native tribes (Whorf, 1956). Whorf was a student of Edward Sapir, who was himself an apprentice of early anthropologist Franz Boas. This lineage is important because Boas' work represented a departure from the views of other anthropologists of his time, who generally spoke with denigration towards "little peoples" who spoke "little languages" (Kay & Kempton, 1984). Boas, in contrast, wrote enthusiastically on the richness of unwritten languages, citing the many features they had in common with Western ones (Kay & Kempton, 1984). Whorf would go on to write that no language can rightly be called 'primitive' (Whorf, 1956). Sapir was also an important influence, of course—the crux of Whorf's thinking is often referred to as the 'Sapir-Whorf hypothesis.' He advanced the idea that concepts do not exist independent of language, and that the 'real' world is instead constructed through a group's language habits (Boas, in contrast, argued that there existed a nonlinguistic 'complete concept,' of which language gives us access to an incomplete part) (Kay & Kempton, 1984; Slobin, 1996). In the same vein as his predecessors, Whorf's ideas challenged the perhaps commonsense view that all normally functioning humans experience the world identically, asserting instead that language produces differences in speakers' perception and understanding of reality (Brown & Lenneberg, 1954). The two main tenets of this 'Whorfian' hypothesis are the following:

1. Structural differences among languages coexist with nonlinguistic cognitive variations in speakers of different languages.

2. The structure of one's native language strongly influences one's outlook on the world (Whorf, 1956).

Whorf arrived at these propositions through examination of Native American groups such as the Hopi, who, he discovered, conceptualize space and time differently than do English speakers (Whorf, 1956). The Hopi language, according to Whorf, consists of nine verbal 'voices' and nine verbal 'aspects,' while English contains far fewer, allowing for greater flexibility and precision in descriptions of past events (Whorf, 1956). The study led him to conclude that along this dimension, the English way of thinking is a 'bludgeon' while Hopi is a 'rapier' (Whorf, 1956, p. 85). In this assertion lies a couched criticism of Western society, entrenched at the time of Whorf's writing in European Nazism and a general assumption of superiority of 'civilized' ideals (Lakoff, 1987). Whorf suggested that we had much to learn from these so-called 'primitive' groups, forcing us to re-assess our analyses of reality as new languages act as "a mirror pushed up to our own" (Fishman, 1982; Whorf, 1956, p. 138).

Yet not all of those who read Whorf choose to interpret him this way. Whorf died young, leaving behind not only a relatively sparse collection of writings, but also a number of ambiguities in his work, meaning that much of his theory has been left open to interpretation (Fishman, 1982; Kay & Kempton, 1984). Whorf's early followers made a strong deterministic reading of his texts, claiming that thought is completely bound by language, and as such that different languages may vary without constraint (Kay & Kempton, 1984). The cognitive revolution in the years that followed led to a near-

outright rejection of such views, and any expressed differences between speakers of different languages were attributed to cultural rather than linguistic factors (Hunt & Agnoli, 1991; Lardiere, 1992). Whorf's proposition of the effect of language on worldview was also discarded because it could not be tested empirically independent of language itself (Grace, 1987; Kay & Kempton, 1984).

In something of a revival of interest in the Whorfian hypothesis, Kay and Kempton (1984) tested speakers of English and Tarahumara, a language originating in northern Mexico. The two languages differ in their categorization of colors; while English contains distinct words referring to the categories 'green' and 'blue,' Tarahumara has the single word *siyóname*, which in English translates to mean 'green or blue' (Kay & Kempton, 1984). The researchers hypothesized that English speakers would differentiate between colored chips with hues close to the green-blue boundary, while Tarahumara speakers would not—a simple perception task yielded the expected, Whorfian effect (Kay & Kempton, 1984). Yet when English speakers' verbal naming strategy for colors was eliminated (participants were asked to compare an ambiguously colored chip, which all agreed could be called either 'green' or 'blue,' to other colored chips), English and Tarahumara speakers' judgments of color similarity were comparable (Kay & Kempton, 1984). Language-primed cognitive differences could be overridden, and the researchers interpreted this finding to mean that Whorf's claim of language variation "without constraint" was discredited, and that other conclusions (based on earlier research on color perception) were also faulty (Kay & Kempton, 1984). The study led to acceptance of a more moderate conception of Whorf's hypothesis (and a shift in terminology—from linguistic *determinism* to linguistic *relativity*) (Kay & Kempton, 1984).

Opponents of Whorf and Evidence for a Universal Language Mechanism

On the opposite end of the argument's spectrum, however, linguists Noam Chomsky and Steven Pinker argue for not relativity, but universality across languages. Though the world's languages do differ considerably from one another, Pinker argues, Whorf may have overestimated the differences he reported simply because he was not a native speaker of the languages he studied (Pinker, 1994). In addition, Pinker claims that people do not think in English, or Hopi, or any other language, but rather in a (universal) nonlinguistic 'mentalese' (Pinker, 1994). However, this perspective ignores the fact that while thought may be nonlinguistic, complex ideas are necessarily transmitted and preserved primarily through language (Grace, 1987). Citing evidence for a universal language-acquiring capacity, Chomsky points out that almost every utterance consists of a sequence of words that the speaker has never heard before, and that children develop the capacity to produce these unique utterances at a remarkable pace and often without formal instruction (Chomsky, 1971; Pinker, 1994). Languages may vary in their superficial qualities, such as the sounds of the specific utterances produced, but at the level of 'deep structure,' Chomsky argues, they are one and the same (Chomsky, 1971).

Yet it does not follow from the idea that language acquisition and usage are universal that the surface structure of individual languages cannot shape thought. (Besides, even if languages' deep structures *were* universal, Chomsky's ideas can never be experimentally proven or disproven since—according to him—deep structure is largely inaccessible.) Interestingly enough, Whorf himself stated that the attention his relativistic theory had received should not be allowed to detract from the importance of language universals (Whorf, 1956). While Whorf's critics can't seem to agree on which

aspects of his theory they disagree with, what does appear clear at a close reading of Whorf himself is that his ideas were not as strongly stated as some of his detractors (or even his supporters) claim (Fishman, 1982; Kay & Kempton, 1984). If Whorf believed that concepts were entirely bound by language, for example, how could he purport to accurately represent the Hopi concept of time, which, as he discusses, does not exist in English (Kay & Kempton, 1984)? Though any version of the Whorfian hypothesis may always be viewed as extreme by some, an understanding of the ethnocentric historical context in which it arose puts it into perspective as what is truly a radically progressive view (Kay & Kempton, 1984).

Language-Bound Thought, 'Mentalese,' or Something In Between?

Perhaps it is misleading to ask a chicken-and-egg question about the relationship between thought and language. Instead, we might do better to accept the possibility that they each affect one another (Grace, 1987). In what can be seen as a compromise between Pinker's 'mentalese' and a strong deterministic perspective, Slobin (1996) discussed a special form of thought directed towards communication, aptly named *thinking for speaking*. This view improves on that of other theorists by shifting the focus from relationships between static constructs (language, thought) to more dynamic ones (thinking, speaking), leading to more objective, testable hypotheses (Slobin, 1996). Slobin proposed that children learn characteristic ways of thinking for speaking when learning their native languages, developing patterns that appear as early as preschool age and persist throughout life (Slobin, 1996). For example, events of a simple picture book are experienced differently by speakers of different languages, not on a perceptual level but in the act of formulating language to talk about them (Slobin, 1996). Children

demonstrate selective attention to concepts easily expressed in their native languages, and also recognize these concepts more easily later (Brown & Lenneberg, 1954; Slobin, 1996). Just as what can be expressed in a single word in one language may require four words in another, some ideas (such as color categories) are simply more 'codable' (and later, nameable) in certain languages than others (Brown & Lenneberg, 1954). Psychological research has long been thought to reveal general universal patterns for constructs such as reasoning ability and intelligence, but cross-linguistic studies have begun to call these claims into question. If researchers can release themselves from some of the dualistic thinking that has long characterized cross-language studies (relativity or universality? variation with or without constraint?), then research may have much to teach us, both about universals and deviations in the space between language and thought.

Following in Whorf's Footsteps: Recent Research across Languages

Contemporary cross-linguistic research varies widely in subject matter and scope. In contrast to early conceptions of linguistic relativity, which tended to compare distinct linguistic groups, often confounded (whether researchers realized it or not) by significant cultural differences, more recent studies have examined speakers of different languages in similar settings (Boas, 1944; Boroditsky & Schmidt, 2003; Jarvis, 2011). Color perception, for example, has become a common means of demonstrating cognitive differences between speakers of different languages (Athanasopolous, Wiggett, Dering, Kuipers, & Thierry, 2009). Greek, Turkish, Japanese and Russian all have distinct words for lighter and darker shades of blue, a seemingly trivial distinction which has led to

widespread research providing evidence that speakers of these languages are better able to distinguish between stimuli of subtly different shades (Athanasopolous et al., 2009).

Some languages, such as Spanish, French, and German, assign genders to nouns, while others do not. Research has found that participants' ideas about gender qualities associated with inanimate objects are indeed influenced by their grammatical genders in their native languages, even when tested in English, in which nouns are gender-neutral (Boroditsky & Schmidt, 2003). Participants had better memory for objects paired with names that matched their grammatical genders—for example "chair" (in Spanish, a feminine noun) would be better remembered when matched with the name "Jennifer" than with "Michael" (Boroditsky & Schmidt, 2003). This phenomenon is even more pronounced when pictures of objects are accompanied by their corresponding verbal labels, a masculine or feminine suffix (such as –o or –a in Spanish) perhaps priming preconceived gender schemas (Boroditsky & Schmidt, 2003). Such labels may lead speakers of noun-gendered languages to shift their representations of otherwise neutral objects to make them more similar to the representations that the labels suggest.

In a now-famous study revealing the power of labels, Loftus and Palmer (1974) presented participants with a video of a simulated car crash, and then asked them to report on what they had seen. Yet in their questioning, the researchers used different words to describe the event, stating that the cars had either "hit," "bumped," or "smashed" into each other (Loftus & Palmer, 1974). The variation of this single word led participants to differ in their reports of how fast the cars had been moving, and in other details such as whether there had been broken glass at the scene (Loftus & Palmer, 1974). Clearly, even seemingly innocuous verbal labels can have powerful implications for

cognition, and practical significance as it relates to tasks such as eyewitness testimony and recall (Pavlenko, 2003).

Much current research on linguistic differences has taken advantage of the experimental possibilities offered by the world's growing multilingual population, often through studies in which bilingual participants are tested in both of their languages of fluency, allowing for greater control of confounding variables as researchers gain insight into how each language is expressed within an individual (Boroditsky, Ham & Ramscar, 2002; Jarvis, 2011; Kobayashi, Glover & Temple, 2008). Investigators are beginning to take a closer look at the notion of *conceptual transfer*, that is, the idea that languages may influence (and sometimes, enhance) each other in bilinguals' internal and external expression of meaning (Jarvis, 2011). In this view, languages are thought of as being built from conceptual building blocks, or units through which meaning can be expressed, which are not universal but rather vary from one language to the next (Von Stutterheim & Nuse, 2003). Slobin (1985) conceived of language as an "opening wedge" for thought, and it follows from this line of reasoning that knowledge of multiple languages might afford speakers greater cognitive and expressive possibilities (Athanasopolous & Kasai, 2008). Yet when it comes to research on conceptual transfer, it is often difficult for researchers to see this larger picture, due in part to the nearly infinite number of language comparisons and cognitive dimensions available for study (Jarvis, 2011).

Having too many options is not the worst problem for an experimenter to have, however, and findings from studies diverse in both languages and constructs tested point overwhelmingly to the idea that language, at least to some degree, shapes some aspects of cognition (Jarvis, 2011). Slobin's (1996) theory of thinking-for-speaking, originally

proposed in the context of first-language learning, has been effectively applied to research on bilingualism, illuminating the ways in which bilinguals attempt to accommodate multiple conceptual structures into a single system (Jarvis, 2011). For example, English speakers tend to sort objects based on shape (placing a wooden spoon with a plastic spoon), while speakers of Japanese sort by material (joining a wooden spoon and a wooden bowl), ostensibly because of the differing ways in which the two languages conceptualize plurals (Athanasopolous & Kasai, 2008). Yet English-Japanese bilinguals, who have access to both organizational structures, alter their preferences based on degrees of proficiency in each language (Athanasopolous & Kasai, 2008).

Similarly, while speakers of English tend to describe events in time using primarily horizontal metaphors (*ahead of the game, behind schedule*), speakers of Mandarin Chinese conceive of time vertically, and in response to vertical primes are better able to answer questions related to temporality (Boroditsky, 2001). Mandarin-English bilinguals, in contrast, demonstrate less 'vertical bias' as a function of the age at which they first began to learn English, further supporting the idea that regardless of the language they are "thinking for," bilinguals do not necessarily limit themselves to concepts available in a single language system (Boroditsky, 2001; Pavlenko, 2003).

Scratching the Surface of 'Deep Structure'?

Language may also have implications for thought on a more abstract level. Indeed, research demonstrates that linguistic factors are most influential in domains not related to sensory experience, which are generally thought to have largely universal properties (Alloway & Corley, 2004; Boroditsky, 2001). For example, speakers of different languages may vary in their recall of identical, but ambiguous stimuli

(Pavlenko, 2003). Concepts which exist in one language and not another (such as the idea of 'privacy,' which has no exact translation in Russian) may simply be not as acutely attended to by speakers of languages in which a particular idea cannot be as explicitly expressed (Pavlenko, 2003). Between speakers of English and German, different aspects of visual events are described as more or less important (the sequence of steps that comprise an action for English speakers; the action's endpoint for Germans) based on the verbal categories made available by each language (Von Stutterheim & Nuse, 2003).

Variations in types of verb tenses present in different languages may lead speakers to encode action events differently (Alloway & Corley, 2004; Boroditsky, Ham, & Ramscar, 2002). Languages that do not specifically denote tense (past/present/future), such as Mandarin and Indonesian, lead speakers to perceive greater similarity between depictions of actions in different tense states (an actor preparing to kick, or having kicked a ball), compared to speakers of tensed languages such as English and Tamil (Alloway & Corley, 2004; Boroditsky, et al., 2002). In this way, a larger number and variety of tenses leads speakers to a more nuanced view of past events (Boroditsky, et al., 2002). Speakers of Indonesian and Mandarin can distinguish between events that are completed and yet to come, of course; they just do so in a different way. Because tense is not intrinsic to verbs of these languages, a consideration of it may simply require extra effort, in the form of additional linguistic markers (Alloway & Corley, 2004). In the same vein, speakers of different languages differ in their spoken retellings of events based on available verb categories. Speakers of English and German parse the narrative flow of information differently, possibly because of differences in the facility of expressing actions in progress vs. those that have already occurred (Von Stutterheim & Nuse, 2003). A test of

Algerian Arabic speakers, who come from a different cultural background but whose language possesses capacity for expression of progressive action similar to that found in English, describe action events much like English speakers do, emphasizing episodes' intermediate steps over their endpoints (Von Stutterheim & Nuse, 2003). This lends further support to the thinking-for speaking hypothesis, versus one of cultural differences (Slobin, 1996; Von Stutterheim & Nuse, 2003).

Though the research is convincing regarding the impact of language on the diverse ways in which ideas are expressed, it is difficult for any one study (or even group of studies) to surmise how deep down these differences truly reach (Athanasopolous & Kasai, 2008; Von Stutterheim & Nuse, 2003). Yet in one deceivingly simple nonverbal study, participant speakers of Greek or English were asked to attend to stimuli based solely on shape (Athanasopolous, et al, 2009). Electrophysiological evidence demonstrated that Greek speakers (who have internalized, because of the Greek language, multiple words for the color 'blue') nonetheless detected slight differences in the *colors* of the stimuli, providing evidence for an unconscious, preattentive effect of language on perception (Athanasopolous, et al., 2009). While this finding cannot necessarily serve as proof that all other hypothesized language-cognition links hold true on a nonlinguistic level, it is an encouraging indicator of possible connections in other domains.

One Intriguing Comparison: Research on Speakers of Spanish and English

A domain of study that has become of special interest to investigators of linguistic relativity as of late is that of the differences between speakers of English and Spanish. According to the 2010 Census, there were 50.5 million people of Hispanic or Latino origin living in the United States, many of them native speakers of Spanish (Ennis, Ríos-

Vargas, & Albert, 2011). Worldwide, over 500 million speak the language (Medrano, 2011). The influx of Spanish speakers to the U.S. over the past several decades (from 2000 to 2010, Hispanics and Latinos accounted for over half of the country's population increase) has meant that Spanish speakers and Spanish-English bilinguals not only figure prominently in American classrooms and the workforce, but are also becoming the majority in certain contexts, making potential cognitive differences between the groups of great interest (Ennis, et al., 2011).

As the Spanish language contains a number of grammatical constructions expressed differently than they are in English, comparisons of speakers of the two languages have yielded a number of interesting findings. For example, speakers differ in their conflations of motion verbs; that is, English speakers attend more to the 'manner' of action verbs (running, skipping, crawling, etc.) while Spanish speakers attend to their 'path' (through, towards, away from) (Naigles & Terrazas, 1998). When explaining novel situations, English narratives tend to contain more detailed trajectories of a subject's motion, while Spanish ones emphasize the static locations of objects (Slobin, 1996). For example, while an English speaker might describe how a bird "flies down from out of" a tree, a Spanish speaker looking at the same picture would likely say simply that the bird "*salió"* (exited) the tree or "*voló hacia abajo*" (flew towards below) (Slobin, 1996). Similarly, English speakers typically focus on actions when describing past events, and Spanish speakers stress these actions' results (Hunt & Agnoli, 1991). One possible explanation for these findings is the existence in Spanish of two distinct past tenses; one (the preterit) which refers to completed actions, and another (the imperfect) which is used to describe actions that once occurred habitually. The English past-tense verb "went," for

example, is used broadly to describe situations that, in Spanish, would be described as either imperfect or preterit. Consider the difference between "I *went* to the circus"—preterit, a once-occurring, completed action, and "I *went* to The College of Wooster"—in which *went* signifies an imperfect action that has not necessarily been completed, and was carried out over an extended period of time. This division, it has been hypothesized, may give Spanish speakers a better understanding of the progressive vs. concluded nature of past events (Slobin, 1996).

Another important grammatical difference between Spanish and English is in the two languages' construction of the passive voice. While the passive voice certainly exists in English ("Mistakes were made," "The battle was won"), it can only be used correctly in certain contexts. In Spanish, in contrast, the passive voice is used much more flexibly; for example, one might say, *"Se me perdieron las llaves,"* "The keys were lost [on me]," thereby removing the blame, so to speak, from the action's agent. While this may seem like a trivial distinction, research shows that not only do English speakers describe accidental events using more agentive language than do Spanish speakers ("She spilled the milk" vs. "The milk spilled"), they have better memory for the agents of such accidents as well (Fausey & Boroditsky, 2008). Most interestingly, English and Spanish speakers remember *intentional* events similarly, as in this instance the Spanish passive voice would typically not be used (Fausey & Boroditsky, 2008). These memory differences as a function of language may have implications for psychological constructs such as locus of control; though research has yet to be conducted to answer this question, it could be that Spanish speakers, in certain contexts, feel less 'responsible' for the physical events than do speakers of languages without this passive construction.

Facing the Social World in Spanish and English

Speakers of Spanish and English may also differ in their understanding of others' emotions. Children learning to speak each of the two languages appear to acquire the vocabulary to speak about mental states along a similar timeline, although some differences in the proportions of speech about the self vs. about others have been noted (Pascual, Aguado, Sotillo & Masdeu, 2008). Among English-speaking preschoolers, syntactic complexity is correlated to frequency of belief verbs; for Spanish-speakers, there is a slightly stronger connection between complexity and verbs of desire (Pascual, et al., 2008). Bilinguals judge emotions differently when tested in each of their two languages, judging more accurately (according the universal emotions identified by Ekman's Facial Action Coding System) in English yet reporting more intensity of subjective experience when tested in Spanish (Matsumoto, Wong, & Martinez, 2008). Although emotion-specific terms are perhaps more accessible in English, speakers apparently had greater access to others' internal emotional states in Spanish, their first language (Matsumoto, et al., 2008).

Does speaking Spanish, then, make one a better 'mind reader'? Research on Spanish-speaking children's development of theory of mind helps to shed light on this question. A representational 'theory of mind,' a developmental construct that children typically acquire during the preschool years, is an understanding that other people may hold beliefs that are different from one's own, and that these beliefs can sometimes be false (Wimmer & Perner, 1983). First examined by Wimmer & Perner (1983), the 'false belief' task requires children to hypothesize about where a character in a story will look for an object that was hidden in a novel location while he or she was away. Children who

correctly respond that the character will look for the object in its usual location are said to have acquired a theory of mind; those who respond incorrectly (basing their answers upon their *own* knowledge of where the object is hidden, not the character's) have not (Wimmer & Perner, 1983).

For young speakers of Spanish, theory of mind acquisition manifests itself in an interesting way. The subjunctive mood, used widely in Spanish but rarely ever (correctly, at least) in English, obligates speakers to create mental representations of multiple "possible worlds," in order to speak about their own and others' desires, requests and beliefs (yes, even false ones) (Pérez-Leroux, 1998). Put simply, the subjunctive is used in situations in which an idea cannot be definitively 'declared.' Take the example of two sentences: "I'm glad that you came to the party" (*Me alegro que viniste a la fiesta*), and "I want you to come to the party" (*Quiero que vengas a la fiesta*). In the second sentence, the speaker does not know whether the listener will come or not; the subjunctive is used to indicate this implicit uncertainty.

Pérez-Leroux (1998) discovered a correlation between children's correct use of the subjunctive mood and success on the false belief task. Once participants correctly made use of the grammatical mood acknowledging their lack of access to others' mental states, they also tended to appropriately answer questions about the potential inaccuracy of others' beliefs. Subsequent research revealed that Spanish-speaking children are more likely to answer the 'think' component of the task ('Where will the character think the object is?') with greater accuracy than age-matched English-speakers (Shatz, Diesendruck, Martinez-Beck, & Akar, 2003). Yet findings of this research may be confounded by differences in participants' socioeconomic status (due, perhaps, to

investigators' desire to recruit those who had not been exposed to multiple languages), and correlations between language and understanding of theory of mind vary widely (Milligan, Astington, & Dack, 2007; Shatz, et al, 2003). Pérez-Leroux (2008) later clarified her previous finding, stating that the two constructs (use of subjunctive and theory of mind) arise not immediately one after the other, as her research had previously been interpreted, but rather gradually, and along different, but related, timelines, both of which may be constrained by neurological development (Pérez-Leroux, 1998).

Other recent research, however, provides encouraging support for Pérez-Leroux's (1998) original findings. 'Early' bilingual children (those who acquire and develop fluency in two languages in childhood) show comparable activity in their medial prefrontal cortices (mPFC) when processing theory of mind problems in one language versus another (Kobayashi et al., 2008). 'Late'-acquisition bilingual adults, in contrast, experience activity in different brain regions based on language of testing, demonstrating more ventral anterior cingulated cortex and bilateral mPFC use when tested in their first language, and left precuneus and right temporal pole activity when tested in their second (Kobayashi, et al., 2008). Such objective, neurological findings lend support to the idea that complex social situations, such as interpreting theory of mind, are conceived of differently based on language, and, specifically, on time of second language learning (Kobayashi, et al., 2008).

On the other hand, false memories have been shown to "cross language barriers" within Spanish-English bilinguals tested with the Deese/Roediger-McDermott (DRM) procedure (in which a list of words is read to a participant with a key word omitted; i.e., a list containing words such as "dream," "bed," "nap," and "awake," but not the word

"sleep.") (Sahlin, Harding, & Seamon, 2005). Participants falsely remembered words in one language that they had been primed with in another language, lending support to the idea that vocabularies (and thus, grammatical stores) may overlap in the mind (Sahlin, et al., 2005). Just as we may never know if the world's languages share a common 'deep structure,' we may never truly understand how language is housed in our minds. These findings suggest, however, that among speakers of two or more languages, there is some cognitive overlap, and at least the occasional conceptual transfer is likely to occur (Jarvis, 2011).

How We Seem "To Be": The Case of Spanish *Ser* and *Estar*

Another key semantic difference between the English and Spanish languages is the existence in Spanish of two copulas, or versions of the English verb 'to be.' The two Spanish forms include *ser*, which is generally used to describe permanent, unchanging qualities of people and objects, such as gender, nationality or occupation; and *estar*, which typically conveys temporary qualities such as spatial location or mood. *Ser* implies identity or class of a well-known object, while *estar* is often used for 'discovery interpretation,' or to describe one's first impressions of a new sensory experience (Maienborn, 2005; Sera, 1992). For both a child learning Spanish as a first language or an adolescent or adult studying it as a second, the acquisition and understanding of both copulas is important, but is also not as easy as it first may seem (Walton & Banaji, 2004). Many linguists argue against the rigid temporary vs. permanent dichotomy of *ser* vs. *estar*, claiming that it is an efficient but 'cheap' way to classify the two verbs (Maienborn, 2005). As with many grammatical principles, there are countless exceptions to the basic criteria distinguishing *ser* and *estar* (Maienborn, 2005; Sera, 1992). While

these distinctions are difficult to convey in English, they represent clear differences to a Spanish speaker: for example, one may say *Él es cortés* (He is a polite person) or *Él está cortés* (He acts politely [today]), which convey very different meanings (Maienborn, 2005).

The development of usage of the two copulas over the Spanish-speaker's life span is not entirely clear, and the literature is fraught with contradictory findings. Some researchers have found that children tend to use *estar* more than adults do, citing a belief that more attributes are temporary (Sera, 1992), while others have found children to be more reluctant than adults to use the verb (Schmitt & Miller, 2007). English-speaking undergraduates studying Spanish have been observed to increase their usage of *estar* as their skill levels increase; on the other hand, Spanish-English bilinguals have been shown to use *estar* more often as their Spanish proficiencies decrease, ostensibly because *estar* allows for a greater variety of expression (Woolsey, 2008; Silva-Corvalán, 1986). Though children as young as 5 years can correctly choose between *ser* and *estar*, speakers' correct usage of Spanish copulas increases steadily with age (Schmitt & Miller, 2007; Sera, 1992).

Possible advantages conferred by the existence of the dual copula in Spanish have also been debated (Sera, Bales, & del Castillo Pintado, 1997). Because *ser* and *estar* represent distinct means of describing people and objects that are difficult, if not impossible, to represent using the same number of English words, Spanish speakers may be better able to determine which features of objects 'count' in certain situations (Sera, 1992). In contrast, when an English speaker hears a sentence such as "He is helpful," the verb 'is' necessarily activates in the listener all of its potential meanings, perhaps leading

to longer processing time as one attempts to parse out which definition the speaker intends (Perfetti, Beverly, Bell, Rodgers, & Faux, 1987). The *ser-estar* distinction may even improve Spanish speakers' recall memory; this more precise, highly differentiated categorization (compared with the English 'to be,' which brings to mind Whorf's 'bludgeon'), makes this aspect of reality more salient and communicable, and thus perhaps more readily available for spontaneous recall. (Pavlenko, 2003).

Adjectives labeled with *ser* are also deemed more significant than those labeled with *estar*, suggesting that speakers of Spanish infer not only meaning, but also importance from copula use (Sera, 1992). In an appearance-reality task conducted with Spanish- and English-speaking children, Spanish-speakers were found to be better able to identify 'real' properties of objects (expressed through *ser*) than were English-speaking children (Sera, et al., 1997). These 'real' properties were contrasted with 'apparent' ones—for example, participants viewed an image of a white lamb through a red filter, and asked what color the lamb was, 'really' (Sera, et al., 1997). Bilingual participants, who formed a natural within-subjects control group, performed better on the task when tested in Spanish than in English, lending further support to the conclusion that appearance-reality distinctions are mediated by language, and that Spanish-speaking children have the advantage of a verb that tells them explicitly whether a quality is 'real,' or intrinsic to an object itself, or not (Sera, et al., 1997).

Furthermore, among bilingual children, both *ser* and *to be* are more likely than *estar* to be used to convey stable human characteristics (Heyman & Diesendruck, 2002). Children who endorse the stability of psychological traits over time are most likely to use *ser*, and these children are also more likely to make negative evaluations of others based

on limited evidence (Heyman & Diesendruck, 2002). An 'essentialist bias' may exist for these children leading them to overuse the verb *ser* when referring to psychological characteristics, but as children mature, *estar* seems to help them 'override' this essentialist assumption (Heyman & Diesendruck, 2002). *Estar* is an 'unmarked' term in the sense that it refers only to the temporary status of things, making no assumptions about their long-term tendencies (Sera, et al., 1997). Taken together, the findings of Heyman and Diesendruck (2002) and Sera, et al. (1997) seem to indicate that while the English language plays no special role in enhancing speakers' judgments of others, the distinction between *ser* and *estar* in Spanish compels Spanish speakers to think more carefully about the stability and veracity of others' traits, simply because their language requires them to do so.

Implications of Grammatical Distinctions for Social Judgments

The *fundamental attribution error*, or *correspondence bias*, refers to a tendency to overestimate the influence of dispositional traits (and underestimate the impact of situational variables) on others' behavior (Gilbert & Malone, 1995). The phenomenon was first examined by Jones & Harris (1967), who found that participants would infer that the author of an essay written in support of Fidel Castro truly endorsed a pro-Castro perspective, even when they were told that the author had been instructed to write from that particular point of view. Correspondence bias' counterpart, the *actor-observer bias* or *actor-observer asymmetry*, is the term used for the inclination to report one's own behavior as the result of temporary, situational factors, while denying the possible contributing influence of dispositional ones (Jones & Nisbett, 1971). The consequences of these dual biases can be pervasive and widespread, resulting in misunderstandings and

misjudgments of others' (and one's own) behaviors. Take the example of a slammed door: An observer might interpret it as the action of an angry, hostile person. With oneself as the agent, however, one can justify the action with any number of situation-based causes (unwarranted criticism from a boss, botched travel plans, a bad hair day). Yet when viewed objectively, it seems plausible that all human behavior may be the product of multiple factors—both situational and dispositional.

This tendency toward dispositional attributions for others' behavior was once thought to be universal, and for children, perhaps rooted an incomplete grasp of theory of mind (Choi, Nisbett, & Norenzayan, 1999). Others have attempted to account for it as a judgmental heuristic; that is, external dispositions may simply be more available and salient to observers than complex contextual factors (Morris & Peng, 1994). The actor-observer bias has been described as the result of a mere imbalance in knowledge; we necessarily have more access to our own internal states than to others', leading us to behave in egocentric ways (Shultz & Butkowsky, 1977).

Such strong 'dispositionism' may not be common to all humans, however. Research suggests that dispositional attributions are more characteristic of individualist than collectivist cultures, in which individual actors' unique attributes are deemed more important (Morris & Peng, 1994). Koreans (who come from a generally collectivist culture) are less likely to demonstrate correspondence bias compared to Americans (who hail from a strongly individualistic one) when situational factors are salient (Choi, et al., 1999). When primed with a question asking them to predict the behavior of an aggregate of individuals, Korean participants were more likely than Americans to state that a single member of the group would behave in a situationally consistent way (Choi, et al., 1999).

These differences, perhaps anchored in some universal attribution style, may be modified by socialization over time; American and Indian children are more similar in their attributions than are American and Indian adults (Choi, et al., 1999). In a non-Eastern example, Hispanic teenagers (tested in English) have been shown to demonstrate more situation-based social understanding than their Anglo-American counterparts, which researchers interpreted to be a product of the collectivist nature of Hispanic culture (Choi, et al., 1999; Newman, 1991). While Anglo students spontaneously inferred personality traits from isolated behaviors, Hispanics were more reluctant to do so, providing more situational (rather than dispositional) explanations for others' behavior (Newman, 1991).

Cultural factors may also affect construals of the self, either as independent (as in individualist cultures) or interdependent (as in collectivist cultures) (Markus & Kitayama, 1991). An interdependent conception of the self may lead one to view one's own and others' behavior as situationally bound, performed with some end beneficial to a group (Markus & Kitayama, 1991). American and Chinese participants differ in their perceptions of social, but not physical events related to group membership and categorization, suggesting convergent understandings of what it means to be a part of a group (Morris & Peng, 1994). Arrays of geometrical figures were interpreted similarly by Chinese and Americans; yet when these figures were replaced with anthropomorphized objects (in this case, fish), a social context emerged (Morris & Peng, 1994). A lone fish departing from the group was seen as being influenced by external factors by Chinese participants, and internal factors by American ones (Morris & Peng, 1994). In addition, speakers of English and Japanese use different words to describe the self, the Japanese

word *jibun* referring to "one's share of the shared life space" (Markus & Kitayama, 1991, p. 228).

Within a single linguistic and cultural community, the labels we assign to ourselves and others may have powerful effects on the judgments we make based upon them. In a study examining children's use of psychological inferences, targets labeled 'nice' or 'mean' prompted trait-specific inferences about the target's future behavior (Heyman & Gelman, 1999). Interestingly, 'nice' labels had a greater effect on judgments than did 'mean,' perhaps because participants felt they could relate to the 'nice' participants, and thus felt better equipped to predict their behavior (Heyman & Gelman, 1999). On the other hand, cross-cultural research has shown that negative behaviors elicit stronger dispositional attributions than do positive ones, possibly due to a sense of otherness that a participant may feel towards a target (Choi, et al., 1999). Beliefs about the stability or malleability of traits are known to develop during childhood, affecting judgmental tendencies (Heyman & Dweck, 1998; Newman, 1991). Children aged 5 and 6 are less likely to believe others' behavior will remain consistent in future situations, while judgments of 8 to 11-year-olds are significantly more rigid (Newman, 1991). This conviction of stability leads to increased attention to behaviors and their outcomes, thought to reveal others' lasting qualities (Heyman & Dweck, 1998). By adulthood, trait understandings once again become more flexible as people come to grasp the complexity of behavior (Newman, 1991).

Yet even in maturity, the grammatical features of a statement may impact the way it is understood. Traits described using noun labels are perceived as more enduring and resilient than those described with corresponding action verbs ("John is a dog person" vs.

"John likes dogs a lot")(Walton & Banaji, 2004). Presumably, nouns act as labels, indicating to the listener who a person *is*, not just how he or she feels (Walton & Banaji, 2004). This seemingly subtle distinction affects the strength of self-reported preferences as well; participants report greater stability of their own traits when primed with a noun than a verb label (Walton & Banaji, 2004). Departing from the commonsense view that we have a clear grasp of what we like and how much we like it, these findings suggest that attitudes, both towards others and about ourselves, are not unchanging but rather pliable and contextually bound, and can be manipulated by even the most subtle (and perhaps even unconscious) of linguistic cues (Walton & Banaji, 2004).

The Present Study

Language mediates perceptions of human emotions and psychological characteristics; thus it seems logical that it might also affect the way speakers of different languages explain their own and others' behavior (Barrett, Lindquist, & Gendron, 2007; Heyman & Diesendruck, 2002). Yet while correspondence bias has been examined cross-culturally, language differences in behavioral attribution have not (Choi, Nisbett, & Norenzayan, 1999; Sera, 2008). The essentialist vs. contextual distinction in making social judgments seems to parallel that between the Spanish verbs *ser* and *estar*. *Ser* is, by nature, a label-implying verb, while *estar* suggests circumstance and temporality. Thus although humans across cultures tend to favor dispositional attributions for others' behavior, among Spanish speakers, this effect may be arbitrated by the verb *estar* (Sera et al., 1997).

The aim of the present study is to address significant gaps in the existing literature regarding susceptibility to the correspondence and actor-observer biases based on

language. Past research suggests that the existence of two copulas in the Spanish language allows speakers to distinguish between temporary and fixed qualities of people and objects (Sera, et al., 1997). Because Spanish speakers have available a vocabulary that allows them to describe human characteristics solely in terms of temporary attributes, it its hypothesized that *estar* will help speakers of Spanish resist the tendency to make only dispositional attributions for others' behavior, and situational attributions for their own. Spanish- and English-speaking children will be presented with pictures depicting social situations accompanied by descriptions using either the verb *ser, estar* (Spanish participants) or 'to be' (English participants). Uses of *ser* and *estar* by Spanish-speaking participants will be measured, and dispositional and situational attributions made by participants in all conditions will be coded. Participant speakers of both Spanish and English are expected to conform to the predictions of fundamental attribution error and actor-observer bias to a certain extent, making more dispositional statements about others and situational attributions in statements about themselves. However, judgments of Spanish-speakers about themselves and others are expected to be more similar across judgment targets, revealing a reduced susceptibility to these 'errors.' Because the verb *ser* is hypothesized to correspond more to dispositional attributions, and *estar* to situational ones, a relationship is expected to be revealed between these respective copula-attribution pairings in the responses of Spanish speakers. If confirmed, the hypotheses of this study may call into question research conducted with English-only populations, thought to reveal universal truths.

Method

Participants

Sixty-one children between the ages of 5 and 12 (*M* = 8. 69 years, *SD* = 1.76, 31 boys, 30 girls) were recruited for study. As one of the experimental tasks consists of two Spanish-language conditions (*ser* and *estar*) and only one English-language condition (to be), 41 Spanish-speaking (*M* = 8. 76 years, *SD* = 1.71, 19 boys, 22 girls) and 20 English-speaking (*M* = 8. 55 years, *SD* = 1.88, 11 boys, 9 girls) children were recruited. The English-speaking children were reached through the Wooster City School System in Wooster, Ohio. The school system superintendent, as well as the principal in charge of the school of testing, granted permission for research. Testing of English-speaking children took place at Lincoln Way Elementary School with Lincoln Way students during the school's after-school program.

Spanish-speaking children and their parents were contacted informally, initially through flyers handed out at a community gathering.[1] Because the Latin American population in the researcher's geographic vicinity was quite small, it was decided that it would be more fruitful to seek participants via community-based channels such as churches and language-learning centers, where native Spanish speakers might be likely to gather, rather than through the public schools, where such children are few and far between. Initial testing was conducted at St. Agnes Catholic Church in Orrville, Ohio, which had a small fellowship center with classrooms well-suited to one-on-one testing. Later testing was conducted in Georgia at St. Benedict Catholic Church in Duluth, and at the Centro Católico del Espíritu Santo in Sandy Springs. Representatives of these two

[1] The flyers contained basic information but did not recruit participants; they were offered to a group of Hispanic mothers who had scheduled the gathering in advance for other reasons, allowing the researcher to attend briefly as a matter of convenience.

organizations were contacted by the researcher by e-mail to explain the study's objectives and organize testing dates. At all locations, experimentation was conducted in classrooms that were not in use at the time of testing.

Because the advantage that the Spanish (and not the English) language confers on thought is of interest in this study, the researcher required only that the native English-speaking sample had not received Spanish instruction, but not vice versa.[2] Parents and/or guardians of participants gave permission for children to take part, and children gave their verbal assent to participate in the study. All children were given a small prize as compensation for their participation. Parents were debriefed through a written statement at the study's conclusion, on which the researcher's contact information was included.

Measures

Overview. The measures used to assess children's judgments were adapted from those used by Heyman & Diesendruck (2002), specifically the inference and story generation tasks. In each of the tasks, children were asked to make a series of statements about their own and others' characteristics. The inference task consisted of two target-judgment and two self-judgment question sets, and the story generation task consisted of two target-judgment prompts and one self-judgment prompt. For the self-judgment component of the story generation task, participants were randomly assigned to 'tell a story' to the researcher about either a positive interaction (the last time they had helped someone) or a negative one (the last time they had made someone angry).

Spanish-speaking participants in the inference task were subdivided into *ser* and *estar* conditions, yielding a 2 x 3 between-groups design, while the story generation task,

[2] It should be noted that all children in the Spanish sample were indeed Spanish-English bilinguals. For the sake of simplicity, however, children in this sample will be referred to henceforth as "Spanish speakers," while speakers of English *only* will be called "English speakers."

in which there will be only Spanish and English language conditions, had a 2 x 2 design. Consistent with the methodology of Heyman & Diesendruck (2002), no order effects were anticipated, and the inference task preceded the story task in all conditions. All tasks were completed in a one-on-one interview setting with the researcher, and were audio-recorded for subsequent interpretation and scoring.

Inference task. In the inference task, the researcher showed each participant a drawing of a fictional child (see Appendix L), accompanied by a series of statements about him or her (Appendix G). These statements consisted of two declarations of fact and one judgment using a form of the verb *to be*. For this task, the participants were tested in one of three conditions relating to the three copula forms: *ser*, *estar*, and *to be*. English-speaking students comprised the *to be* condition, while the Spanish-speaking students were randomly assigned to take part in either the *ser* or *estar* conditions.

In one question set, for example, the researcher stated, "I know an 8-year-old girl named Anna. There are toys all over her bedroom floor. Anna is messy." In the Spanish conditions, the researcher said, *"Conozco a una niña de ocho años que se llama Anna. Hay juguetes por todo el suelo de su cuarto. Anna [es/está] desordenada."* In the Spanish-language conditions, the only difference was the copula used in the third sentence (*es* corresponding to *ser* and *está* corresponding to *estar*). After the researcher's statements had been made, a series of three questions were posed to the child designed to assess their perceptions of the stability of the target's traits (Sera et al., 1997). Children were asked to explain the target's situation ("Why do you think there is a mess in Anna's room?") and then make inferences about the target's behavior, including inferences to other contexts and future situations, e.g. "When Anna goes to school, does she make a

mess there?" "Do you think Anna will have toys all over her floor when she is 10 years old?". These follow-up questions in Spanish were framed so that none contained a form of either *ser* or *estar*. In the Spanish-language conditions, uses of *ser* vs. *estar* in children's explanations were coded (+1 for each usage, yielding separate *ser* and *estar* scores). In all conditions, the researcher coded for dispositional ("Anna is a careless person") vs. situational ("She had friends over to play") attributions for targets' behavior. Each statement of behavioral attribution was given a -1, and statements of situational attribution were scored as a +1, yielding an overall attribution score. Negative attribution scores were interpreted as indicating greater dispositional attribution, while positive scores were thought to indicate greater situational attribution.

The self-judgment component of the inference task was constructed similarly, although because the hypothetical situations could not actually be created, children were shown drawings of people, and asked to imagine that they were taking part in the situation depicted. They were asked to guess what an unknown bystander might infer about their behavior if they were to observe them engaged in that activity. Sample test items included prompts such as, "Suppose someone saw you take a ball away from another child. They might say that you are mean." (*"Supón que alguien te vio quitarle una pelota al otro niño. Es posible que diría que [eres/estás] antipático."*). The corresponding inference questions were also phrased hypothetically: "How do you think someone else would explain why you took the ball away?" "If another child was building a tower with blocks, would they think you'd knock the tower down too?" "Would they think you would take the ball away again the next day?" Scores of dispositional and

situational attribution and use of *ser* and *estar* were coded as they were in the target-judgment task.

Story generation task. In the story generation task, the researcher's interest was in children's spontaneous production of dispositional and situational attributions, and, in the Spanish-language conditions, of children's use of *ser* and *estar*. Since children were merely asked to develop a story based on a prompt, only two conditions (English and Spanish) were used in this task. Children were shown drawings of a child performing a specific action, similar to those used by Sera, et al. (1997), accompanied by a verbal description made by the researcher. For example, one picture portrayed one girl pulling the hair of another, with the description "Look at Sara pulling her sister's hair" ("*Mira a Sara jaleándole el cabello a su hermana").* Participants were then asked to tell a story about the child in the picture and to explain his or her behavior. Uses of *ser* and *estar* in the Spanish condition and dispositional vs. situational statements in both conditions were coded as they were in the inference task.

For the self-judgment component of this task, participants were asked to recall either the last time they had helped another person, or the last time they had made another person angry, and were then asked to imagine that another person had witnessed that incident.[3] The researcher then asked participants what another child might say if they had seen the participant engaged in the activity just described: "Suppose a child you've never met before saw you doing *x*. What story might they invent about you?" (*"Supón que un*

[3] The researcher attempted to assign children randomly to describe either an incident in which they had helped another person or one in which they had made someone angry. However, some children were unable to provide an example for the first type of incident requested (helping or making another person angry); in these cases, the researcher asked the participant for an example of the alternative incident type. Almost all participants were able to generate an example for either one prompt or the other.

niño desconocido te miró haciendo x. ¿Qué cuento contaría ese niño sobre ti?"). Uses of *ser* and *estar* and dispositional vs. situational attributions were coded.

Scoring. For all tasks, attributional style was defined as one's score on each of the dependent measures. Participants received a +1 for each response indicating a dispositional attribution (e.g., "Peter helps his mom because he is nice"), and a -1 for each statement indicating a situational attribution ("Peter helps his mom because she had a hard day at work"). Higher scores, then, were interpreted as indicating a more dispositional attribution style, while lower scores were thought to indicate more situational attribution. Scores of zero represented an equal number of statements suggesting either dispositional or situational attribution.

Results

In this study, the following hypotheses were addressed: 1) Consistent with the predictions of the fundamental attribution error and actor-observer bias, participants in all conditions would tend to provide more situational attributions for their own behavior and dispositional attributions for the behavior of others. 2) This difference in judgments of others and oneself was expected to be less pronounced, however, among Spanish-speaking participants, particularly those assigned to the *estar* priming condition. That is to say, attribution scores for both others and self were expected to be closer to 0, indicating an equal number of dispositional and situational attributions. 3) Furthermore, in the two Spanish conditions, a relationship was anticipated between respondents' uses of the verb *estar* (a word which tends to suggest changeability of peoples' traits) and situational attributions, and a parallel relationship between uses of *ser* (which often indicates stability) and dispositional attributions. These hypotheses were assessed

statistically using a set of 3 x 2 ANOVAs, paired and independent t-tests, and Pearson's correlation coefficients. The alpha level for all analyses was .05.

Attribution Style and Language Condition: Inference Task

The means and standard deviations of the three groups' (*ser*, *estar*, and *to be*) attribution scores on the inference (priming) task are displayed in Table 1. The pattern of results was generally consistent with that predicted. Averaged across the two verb conditions, Spanish-speaking participants provided slightly more dispositional attributions when speaking about others (M = 1.65) than about themselves (M = 0.935). Whether judging oneself or another person, participants in the *estar* condition had the lowest (that is, most situational) attribution scores, compared with participants in the other two conditions. The highest mean disposition score overall reflected that of English-speaking participants in the self-judgment condition (M = 3.85), inconsistent with what the actor-observer bias might have predicted.

Table 1

Mean Attribution Scores on Behavioral Inference Task

	Other		Self		Total	
Group	M	SD	M	SD	M	SD
Ser (n = 20)	2.25	2.245	1.25	2.900	1.75	2.573
Estar (n = 21)	.95	2.67	.62	2.156	.785	2.415
To be (n = 20)	1.65	2.183	3.85	2.346	2.75	2.265
Total (n = 61)	1.61	2.403	1.89	2.817	1.75	2.61

A 3 x 2 ANOVA was performed on participants' attribution scores, with verb form as a between-subjects measure and judgment target (self or other) as a within-

subjects variable. There was a main effect of language condition $F(1, 58) = 5.666$, $p = .006$. Tukey's HSD post hoc comparisons allowed for examination of the attribution scores of participants in the three groups, and found a significant difference between scores of participants in the *estar* ($M = .785$) and English ($M = 2.75$) conditions, mean difference = 1.96, $p = .004$. No main effect of judgment target on attribution style was observed, $F(1, 58) = .523$, $p = .472$. A significant interaction effect was observed between condition and judgment target, $F(2, 58) = 5.883$, $p = .005$. A series of pairwise comparisons were made between mean values in order to elucidate the nature of this interaction; to compensate for the multiple t-tests that were calculated, the alpha level was reduced to $p < .01$. Significant differences were found between English-only participants' attribution scores of others and themselves ($t = -3.378$, $p = .003$). In addition, English speakers' self-judgment scores were significantly different from self-judgments of Spanish speakers in both the *ser* ($t = 3.12$, $p = .003$) and *estar* ($t = 4.44$, $p < .001$) priming conditions, as well as from participants in the *estar* condition's judgments of others ($t = 3.681$, $p = .001$) These findings may be due to the responses of English-speaking participants, whose dispositionally-based attributions of themselves were unexpectedly high. No other comparisons were found to be statistically significant.

Attribution Style and Language Condition: Story Generation Task

Means and standard deviations of Spanish- and English- speaking participants' attribution scores on the story generation task are summarized in Table 2. Because on these items Spanish-speaking participants were not primed with one verb form or another, their responses were combined into a single pool for this analysis. The means in Table 2 suggest that Spanish speakers were modestly less 'dispositional' across judgment

targets, lower scores for both self- (M = .40) and other-judgments (M = -.65) indicating greater situational attribution. Unexpectedly, both English- and Spanish-speakers provided more dispositional than situational attributions when speaking not about others, but about themselves. When asked to make judgments about others, attribution scores of Spanish (M = -.65) and English (M = -.85) participants were comparable. English-speaking participants demonstrated markedly higher attribution scores (M = .80) than did Spanish speakers (M = .40), however, when asked to make statements about themselves. A 2 x 2 ANOVA was performed on participants' scores on this task; as in the inference task, language served as a between-subjects variable while judgment target was a within-subjects measure. A main effect of judgment target was revealed, $F(1, 58) = 52.960$, $p < .001$, in which participants tested in both languages were provided more situational attributions when describing others, and more dispositional attributions when speaking about themselves. There was no main effect of language condition, $F(1, 58) = .245$, $p = .623$; and no interaction effect, $F(1, 58) = 2.615$, $p = .111$.

Table 2

Mean Attribution Scores on Story Generation Task

	Other		Self		Total	
Group	M	SD	M	SD	M	SD
Spanish (n = 40)	-.65	1.292	.40	.709	-.125	1.001
English (n = 20)	-.85	1.137	.80	.616	-.025	.876
Total (n = 60)	-.75	1.215	.60	.663	-.075	.939

Verb Use and Attribution Style: Inference Task

Pearson's r correlations were conducted to determine the relationship between Spanish-speaking participants' uses of either *ser* or *estar* and their attribution scores on

the inference task, in which responses immediately followed verb priming by the researcher. The results of these correlations are displayed in Table 3. A marginally significant inverse relationship was found between children's use of *estar* and dispositional attributions of others, $r = -.300$, $p = .057$. No effect was observed either of sex, $r = -.030$, $p = .817$, or of age, $r = .057$, $p = .661$, on attributional style.

Table 3

Correlations between Spanish-Speaking Participants' Attribution Scores and Uses of Ser and Estar: Inference Task

Measure	Ser		Estar	
	Target	Self	Target	Self
Attribution Score	.163	-.081	-.300	-.175

Verb Use and Attribution Style: Story Generation Task

A series of Pearson's *r* correlations was conducted to determine the relationship between Spanish-speaking participants' uses of *ser* and *estar* and their corresponding attribution scores in the story generation task, in which they were not primed by the researcher with one copula form or another. These correlations are displayed in Tables 3. A significant relationship was revealed between Spanish-speaking children's spontaneous uses of the verb *ser* and dispositional attributions when participants were talking both about themselves, $r = .516$, $p = .001$, and about others, $r = .709$, $p = .000$. No relationship emerged between uses of *estar* and attributions, neither about others or oneself; in fact, no participant made use of the verb *estar* in his or her self-descriptions.

Table 4

Correlations between Spanish-Speaking Participants' Attribution Scores and Uses of Ser and Estar: Story Generation Task

Measure	Ser		Estar	
	Target	Self	Target	Self
Attribution Score	.709**	.516**	-.088	^

Note: *$p < .05$; **$p < .01$, ^ Correlation could not be computed as no participants used *estar* in their responses to this item.

Discussion

Assessment of Hypotheses

With regard to the researcher's first hypothesis (in which participants in all conditions were expected to provide more situational attributions for their own behavior and dispositional attributions for others' behavior), the findings of this study are mixed. For the inference task, the hypothesis was generally supported; all participants, with the exception of English-speaking participants in the self-judgment condition, did provide more dispositional attributions when speaking about others than about themselves. Interestingly, participants in this condition not only provided more dispositional attributions for others than themselves—they provided the greatest mean number of dispositional attributions overall (see Table 1). For the story generation task, the results are even more puzzling. Participants in both Spanish and English conditions described *themselves* more dispositionally than they did a fictional target (see Table 2). When speaking about others on this task, both Spanish- and English-speaking participants were decidedly situational; negative mean attribution scores for both groups indicated a greater number of situational (-1) than dispositional (+1) attributions.

The second hypothesis predicted that across judgment targets in the inference task, the differences between 'self' vs. 'other' attribution scores of Spanish-speaking

participants, especially those in the *estar* condition, would be smaller than those of English speakers, indicating a more equivalent number of dispositional and situational attributions. Indeed, participants in the *estar* condition did provide the least dispositionally-oriented attributions across groups. Furthermore, the *estar* condition's mean self- vs. other-judgments were the least different from one another (*M* difference = .33), followed by those of participants in the *ser* (*M* difference = 1.0) and *to be* conditions (*M* difference= 2.25). However, statistically significant differences between these pairs of means arose from comparisons with self-judgment scores of English-speaking participants, which, as noted above, were unexpectedly high. Though the attributional valence of English-speakers' judgments appears contrary to the predictions of the fundamental attribution error, the fact that these participants' self- and other-judgments were in the greatest contrast (followed by those of participants in the *ser*, and finally *estar* conditions), provides weak support for the Spanish language's, and specifically, the verb *estar*'s hypothesized ability draw speakers' judgments away from their dispositional defaults.

Though falling short of statistical significance, these results seem to support those elicited by Sera et al.'s (1997) appearance-reality task. If we think of the present study's dispositional/situational distinction in analogous terms to the appearance-reality paradigm (in which 'appearance' represents biased judgments and 'reality,' more balanced ones), a similar pattern of findings emerges. For the inference task, Spanish-speaking participants in the *estar* condition were least 'biased' overall (scores closer to zero indicating a more equal number of situational and dispositional attributions). Priming with *estar* for these

participants may have activated its 'appearance'-centered connotation, signaling an understanding that things are not always as they seem.

Finally, a relationship was surmised to exist between Spanish-speaking participants' uses of *estar* with situational attributions, and *ser* with dispositional ones. For the story generation task, strong positive correlations were found between uses of *ser* and higher dispositional attributions, both of others and self (Table 4). Heyman & Diesendruck (2002), on whose work the design of the present study was based, also examined relationships between uses of *ser* versus *estar* and participants' responses on their dependent measures. Similarly, they found a relationship between beliefs of trait stability and use of *ser*, but not use of *estar*, taking this finding to mean that children had a general preference for *ser* when describing behavior. In the current study, on the inference task, an inverse relationship approaching significance was revealed between uses of *estar* and judgments of others—that is to say, participants tended to make less dispositional statements in conjunction with this verb (Table 3). These relationships suggest that, at least in some cases, Spanish speakers do reserve *estar* for situationally based declarations, preferring *ser* for dispositional ones.

Complications, Confounding Variables, and Directions for Further Research

Several factors may have accounted for the present study's failure to yield findings as robust as were hoped, and may be of interest to those seeking to conduct further research in this area. Foremost among these potential shortcomings was the level of bilingualism among participants tested in Spanish. While some of those tested emigrated with their families from Spanish-speaking countries, the majority of participants were born in the United States, and were equally, if not more, proficient in

English than they were in Spanish. While Spanish may have technically been a first language for some participants, many of these children's lives, at school as well as at home, were being lived in English. Indeed, a handful of participants seemed truly uneasy at the prospect of having to speak Spanish (though eventually cooperated), occasionally struggling to find the right word to express one idea or another. For research that attempts to examine the possible influence of linguistic frameworks on thought (and posits that some ideas may be easier to express in one language than another), a participant's reluctance to make use of an available framework is less than reassuring. More specifically, however, Spanish language proficiency may have had implications for how readily participants used *ser* and *estar* (Silva-Corvalán, 1986). As this possible limitation was not anticipated prior to testing, no data were collected relating to participants' language proficiency or usage of Spanish versus English in the home. Future research may want to consider including a measure of this sort, or else pretesting participants for levels of fluency before including them in a sample. Better still, an ideal sample would include participants who had never been exposed to English, and thus had no choice but to 'think for speaking' in Spanish alone.

An additional constraint on the sample tested was that it was relatively small. The scarcity of the native Spanish-speaking population in the initial area of testing made recruiting a very large sample unfeasible, especially when eligible participants were limited to a narrow age range. For this reason, children between the ages of 5 and 12 were allowed to participate, a range much wider than that used in comparable research (Heyman & Diesendruck, 2002). This range may have introduced greater variability into the sample, particularly as it relates to children's changing uses of *ser* and *estar* and

attribution styles as they mature (Heyman & Diesendruck, 2002; Sera, 1992). Existing research is inconclusive regarding the stability or gradual development of children's copula usage patterns over time (Heyman & Diesendruck, 2002; Schmitt & Miller, 2007; Sera, 1992; Silva-Corvalán, 1986). Nonetheless, over the course of experimentation for the present study it became clear that aside from changes in the use of one verb or another, older children may have simply been more capable of understanding and responding to the stimulus questions than were younger ones, particularly for items requiring more complex theory of mind-type processing, such as inferring what sort of judgment an unknown person might form about oneself.

Results may also have been influenced by methodological factors, namely, the specific scenarios participants were asked to form judgments about. In developing stimulus materials, care was taken to include an equal number of pictures with positive and negative valences, representing prosocial and antisocial behaviors, respectively. However, the unexpectedly high dispositional attributions observed on certain measures may be a product of the fact that participants were simply more willing to ascribe positive statements to themselves (while rejecting negative ones outright), even if that meant providing dispositional attributions for their own behavior. Moreover, individual stimulus pictures may have been interpreted by participants differently than the researcher intended. For example, one picture depicted a boy ('Mark') helping a new student at school; participants were asked to explain why Mark helped the new boy. Instead of making a judgment about Mark, however, many participants made some statement about the new student ('He doesn't know his way around,' e.g.), which the researcher understood to be more situational than dispositional (statements such as 'Mark is nice,'

'He is a good friend,' were thought to indicate dispositional attribution). Future research may want to attempt to anticipate these types of responses prior to testing, or use a greater number of stimulus pictures in order to reduce these possible differences based on particular items.

While the design of the present study lent itself agreeably to experimentation with young children, there is evidence that children's uses of *ser* and *estar* and their corresponding judgments differ from those of adults (Schmitt & Miller, 2007). As the consequences and implications of adult social interactions may be greater (or, at the very least, different) from those of children, future research might devise a similar design investigating adults' judgments of self and others based on these verbal primes, or even a comparison of attributions made in childhood and maturity. An extension of this research might also consider the ways that cultural differences may intersect with language and judgments. Newman (1991) found that Latino fifth-graders at an urban school tended to give more situational than dispositional attributions for others' behavior than did their non-Latino classmates, which he took to be a product of experience with a more collectivist culture. While the present study was interested solely in linguistic, rather than cultural factors on judgments, Newman's work reminds us that language and culture are inseparable from one another. Future research might examine Spanish speakers from several Hispanic cultures (Spain vs. Mexico, for example) in an attempt to parse out these potential influences.

Final Remarks: What Would Whorf Say?

So does language influence thought? First, let us assess the present study's findings in terms of Whorf's (1956) original hypothesis. The first premise of Whorf's theory asserts a relationship between diverse languages' structural differences, and corresponding cognitive variations among speakers of these languages. The present research examined this very relationship, and appears to indicate at least modest support for Whorf's hypothesized 'cognitive variations,' as evidenced in Spanish- and English-speakers' varying conceptions of others and themselves. The second arm of the theory states that the structure of one's native language has a strong influence on one's worldview—a claim much more complicated to uphold or refute. While linguistic factors may have important, as-yet-undiscovered implications for social dealings, a concept like 'worldview' is difficult to define, and ultimately far beyond the scope of this study (incidentally, many other scholars have come to this very conclusion—the 'worldview' component of Whorf's original theory has now been generally abandoned) (Kay and Kempton, 1984).

Certainly, the findings of this study do not align with the perspective of Whorf's early followers, who believed thought to be entirely 'bound' by language. In many respects, English- and Spanish-speaking children's judgments were more alike than they were different. Yet neither do they give credence to the arguments of linguists such as Pinker and Chomsky, who might predict that participants tested each language would judge stimuli identically; it is clear that, at least on certain comparisons, language of testing did have an effect.

Slobin's (1996) thinking-for-speaking model seems plausible as an explanation for this study's findings. It would be tenuous at best to claim that English and Spanish speakers truly processed the stimulus scenarios differently at a perceptual level (the stimulus pictures used, after all, were identical for all groups). However, it is conceivable that in the act of responding to the researcher's prompts, Spanish speakers, having a choice between two category-signaling verbs instead of one, were simply more able than English speakers to express the nuances of their nonverbally formulated beliefs.

This distinction between internal perception and outward expression is important as it pertains to our understanding of social-psychological phenomena, namely the fundamental attribution error and actor-observer bias, thought to reveal global tendencies shared by speakers of all languages. As the findings of the present study seem to suggest, these 'errors' may be less widespread than we take them to be. The dearth of cross-linguistic investigations in this area makes the task of determining the role of language in shaping children's attributions rather difficult—and clearly, a single study cannot hope to dismantle the ample body of existing research on judgmental biases simply because it has only made use of English-only populations. Yet the very lack of research of this nature may be a signal of the difficulty in conducting it, and in interpreting the meaning of its findings. The constructs of interest in the present study occur at a messy intersection of developmental changes, cognitive and linguistic frameworks, and cultural influences, which do not always interact in predictable ways.

Nevertheless, this study's findings point toward differences worthy of further investigation. Future research should identify other linguistic distinctions that may have implications for particular psychological constructs, and even attempt to explore how

multiple features of a language might interact to produce the entire panorama of psychological experience. For if our thoughts and speech are, in fact, shaped by language, then our understanding of differences between languages may aid our understanding not just of our own minds, but of the very nature of what we call 'reality.' As Whorf shrewdly observed, "Western culture has made, through language, a provisional analysis of reality and holds resolutely to that analysis as final; the only correctives lie in other tongues, which by eons of independent evolution have arrived at different, but equally logical provisional analyses" (Whorf, 1956, p. 244).

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Appendix A
Letter Sent to Superintendent of Wooster City Schools

Michael Tefs, Superintendent
Wooster City School District
144 N. Market Street
Wooster, OH 44691

Dear Mr. Tefs,

My name is Mary Dixon, and I am a student at The College of Wooster. As a senior, I am in the process of completing a project known as Independent Study (I.S.), a year-long research venture completed with the help of a faculty member. The great thing about I.S. is that it allows students to craft projects around their interests—for example, I am a psychology major, but have always had a deep interest in language, and have just returned from a semester abroad in Spain. For my I.S., I hope to work with English- and Spanish-speaking children, operating under the hypothesis that certain grammatical qualities of the Spanish language enhance speakers' understanding of others' behavior. I plan to test this hypothesis through a series of simple tasks, including story telling and interpretation.

My goal in contacting you is to recruit approximately 20 English-speaking students between the ages of 6 and 10 (grades 1-5) to participate in this study. I am receiving help in the community to reach Spanish children separately. I plan to present the children with a series of simple pictures of people engaged in various activities, and then ask them to make inferences about those people based on what they see. After children have made their responses to the pictures and questions, they will be rewarded with some sort of prize, such as a pencil or school folder, for their participation in the project. Children's answers will be tape recorded for later interpretation, though their responses will not be associated with any identifying information. Total testing time per child should not exceed 15 minutes, and thus could be conducted during the school day with minimal disruption to students' schedules and teachers' lesson plans.

I'd like to arrange a time to meet to discuss my project, as I'd like to begin my testing in October. I'll bring in all of the materials (pictures, etc.) I plan to use for your approval, and more detailed information about the procedures I plan to use. When would be a good time for you to meet? I can be reached by e-mail at mdixon12@wooster.edu , or by phone at (404) 697-5817. Thanks in advance for your help, and I'll look forward to talking with you soon!

Sincerely,
Mary Dixon

The College of Wooster
Box C 1445
1189 Beall Avenue
Wooster, OH 44961

Appendix B
Recruitment Flyer Distributed to Hispanic Families in Orrville

Me llamo Mary Dixon, y **soy estudiante de psicología** en la universidad de Wooster. Estoy en proceso de realizar un proyecto investigando diferencias posibles del desarrollo entre hablantes del inglés y el español, y necesito su ayuda. **Busco 40 niños que tengan entre 6 y 10 años** para participar en mi proyecto. Les mostraré unos dibujos de personas, y les preguntaré unas cosas en cuanto a las características de las personas dibujadas. Las identidades de los niños participantes permanecerán anónimas; no necesito nada más que sus edades y nombres de pila.
Espero que la prueba no dure más que 10 o 15 minutos por cada niño. En este momento, estoy haciendo planes para arreglar unas fechas para hacer las pruebas. Espero que empiecen a fines de octubre, y que tomen lugar aquí en la iglesia o en otro sitio que se convenga.

Cada participante recibirá un premio por su participación. **Será también una rifa** para las familias que participen; cada participante será entrado para ganar una tarjeta regalo a Walmart.

Por favor, si Uds. tienen hijos (o hijas) que tienen entre 6 y 10 años, o si conocen a alguien que los tenga, pónganse en contacto conmigo o con Jenny. Quiero comenzar con las pruebas tan pronto como yo pueda, así que tendré más información para Uds. en las semanas que vienen.

¡Gracias de antemano por su ayuda!

Si tienen Uds. cualquier pregunta, **no duden en ponerse en contacto conmigo**. Mis datos son los siguientes:
Mary Dixon, (404) 697-5817 (móvil); mdixon12@wooster.edu (correo electrónico); Box C 1445, 1189 Beall Avenue, Wooster, OH 44691 (dirección)
Jenny Derksen, 330-464-6918

Appendix C
English Translation of Recruitment Flyer Distributed to Hispanic Families in Orrville

My name is Mary Dixon, and I am studying psychology at the College of Wooster. I am in the process of completing a project examining possible developmental differences between speakers of English and Spanish, and I need your help. I'm looking for 40 children between the ages of 6 and 10 to participate in my project. I will show them some pictures of people, and then ask them questions related to the characteristics of the people portrayed. The identities of the children who participate will remain anonymous; I don't need any information besides their ages and first names.
The test shouldn't last more than 10 or 15 minutes per child. Right now, I am making plans to arrange a few dates to conduct the tests. I hope that the tests will begin at the end of October, and will take place here at the church or at another place convenient for you.
Each child will be rewarded for his or her participation. There will also be a raffle for the families that participate; each participant will be entered to win a gift card to Walmart.

Please, if you have children between 6 and 10 years old, or if you know someone that does, get in touch with Jenny or me. I would like to begin testing as soon as I can, so I will have more information for you in the coming weeks.

Thanks in advance for your help!

If you have any questions, don't hesitate to get in touch with me. My information is the following:
Mary Dixon, (404) 697-5817 (cell), mdixon12@wooster.edu (e-mail)
Jenny Derksen, 330-464-6918

Appendix D
Consent Form for Parents of English-Speaking Participants

Permission to Participate in Research

The goal of this study is to investigate the ways in which speakers of different languages make social judgments, both about others and about themselves. If you allow your child to take part in this study, I will present them with a series of pictures of people, and then ask them a few simple questions related to those pictures. The entire study should not last more than 20 minutes for each child. There is neither risk nor benefit of participating in this study; your child's participation is voluntary and he or she can choose not to participate at any time. Your child's identity will remain anonymous; I will use a randomly assigned number rather than his or her name when I review his or her responses. Although your participation will not cost you any more than your time, each child will receive a small prize for his or her participation. If you have any questions, don't hesitate to get in touch with me by e-mail (mdixon12@wooster.edu) or phone (404-697-5817). Thank you for your participation.

By signing below, you affirm your understanding of the information above.

Signature of Parent/Guardian:_____

Date:_____

Appendix E
Consent Form for Parents of Spanish-Speaking Participants

Permiso Para Participar en el Estudio

La meta de este estudio es investigar las maneras en las que hablantes de idiomas diferentes hacen inferencias sociales, tanto sobre otras personas como sobre sí mismos. Si deja Ud. que su niño se haga parte de este estudio, a él o ella le mostraré unos dibujos de personas, y le preguntaré unas preguntas sencillas relacionadas con ellos. El estudio entero no debe durar más que 10 minutos por cada niño. No hay ningún riesgo ni beneficio por participar en este estudio; la participación de su niño es voluntaria y puede decidir que ya no quiere participar en cualquier momento. La identidad de su niño permanecerá anónima; usaré un número asignado al azar en vez de su nombre cuando examino sus respuestas. Aunque participar no le cuesta nada a Ud. más que su tiempo, cada niño recibirá un premio pequeñito por su participación. Si tiene Ud. cualquier pregunta, no dude en ponerse en contacto conmigo por correo electrónico (mdixon12@wooster.edu) o por teléfono (404-697-5817).
Muchas gracias por su participación.

Por firmar abajo, acepta Ud. que ha entendido todo lo dicho por arriba.

Firma de Padre/Custodio del Niño: _____

Fecha: _____

Appendix F
English Translation of Consent Form for Parents of Spanish-Speaking Participants

Permission to Participate in Study

The goal of this study is to investigate the ways in which speakers of different languages make social judgments, both about others and about themselves. If you allow your child to take part in this study, I will show them some pictures of people, and then ask them a few simple questions related to those pictures. The entire study should not last more than 20 minutes for each child. There is neither risk nor benefit of participating in this study; your child's participation is voluntary and he or she can choose not to participate at any time. Your child's identity will remain anonymous; I will use a randomly assigned number rather than his or her name when I review his or her responses. Although your participation will not cost you any more than your time, each child will receive a small prize for his or her participation. There will also be a raffle for those that participate; each participant will be entered to win a Walmart gift card. I will get in touch with the winner of the raffle after all of the tests have been completed. If you have any questions, don't hesitate to get in touch with me by e-mail (mdixon12@wooster.edu) or phone (404-697-5817). Thank you for your participation.

By signing below, you affirm that you understand all that is said above.

Signature of Parent/Guardian:_____
Date:_____

Appendix G
Script Used in Testing of English-Speaking Children

We're going to play a game. I'll show you pictures of different people and tell you a little bit about them, and you can tell me what they'll do next.

1. This is Peter. He helps his mom wash the dishes. Peter is helpful.
   - Why do you think Peter helps his mom?
   - When Peter's dad is home, do you think Peter helps him mow the grass?
   - When Peter gets a little bit older, do you think he will still help wash the dishes?

2. This is Anna. There are toys all over the floor of her room. Anna is messy.
   - Why do you think there is a mess in Anna's room?
   - When Anna goes to school, does she make a mess there?
   - In three years from now, will Anna still have toys all over her floor?

Now, I'm going to ask you to use your imagination, and pretend that someone who had never met you watched you doing different things. You'll have to guess what they might say about you.

3. Suppose someone saw you waiting your turn to go down the slide. They might say that you are polite.
   - Would they think you always wait your turn when you stand in line?
   - Would they think you would say "please" and "thank you" when you ask for something?
   - Would they think you'd always wait your turn, even when you're older?

4. Pretend that someone saw you take a ball away from another child. They might say that you are mean.
   - How would someone else explain why you took the ball away?
   - If another child was building a tower with blocks, would somebody think you'd knock the tower down too?
   - Would someone think that you'd take away the ball the next day too?

For this next game, I want you to tell me some stories. I'll show you pictures of different children and you can tell me what you think about them.
1. Look at Sara pulling her sister's hair. Tell me a story about Sara. Why does she pull her sister's hair?
2. Look at Mark helping a new boy at school. Tell me a story about Mark. Why does he help the new boy?

Now, I want you to tell me some more stories. What kind of story might someone who's never met you make up if they saw you one day? *(Participant will only be asked one of these two)*
1. Can you remember the last time you helped someone? What happened? If someone you'd never met saw you doing that, what kind of story would they make up about you?
2. Can you remember the last time you made someone angry? How did it happen? If someone you'd never met saw you doing that, what kind of story would they make up about you?

Appendix H
Script Used in Testing of Spanish-Speaking Children

Vamos a jugar un juego. Te voy a mostrar unos dibujos de niños diferentes, y contarte un poco sobre ellos. Quiero que me digas que más van a hacer.

1. Esto es Pedro. Pedro ayuda a su madre a fregar los platos. Pedro es/está amable.
   - ¿Por qué crees que Pedro ayuda a su madre?
   - ¿Cuándo el padre de Pedro está en casa, crees que Pedro le ayuda a cortar el césped?
   - ¿Cuándo Pedro sea mayor, crees que ayudará todavía a sus padres?

2. Esta es Ana. Hay juguetes por todo el suelo de su dormitorio. Ana es/está desordenada.
   - ¿Por qué crees que hay desorden en el dormitorio de Ana?
   - ¿Cuándo Ana va a la escuela, hace desmadre allí también?
   - ¿En tres años, habrá todavía desorden en su dormitorio?

Ahora, te voy a pedir que uses la imaginación, y que hagas como alguien que no te conozca te miró haciendo cosas diferentes. Tendrás que imaginar qué diría esta persona sobre ti.

3. Supón que alguien te vio esperando a que te tocara para bajar por la resbaladilla. Es posible que diría que eres/estás educado.
   - ¿Por qué diría alguien que esperaba a que te tocara?
   - ¿Pensaría que siempre diría "por favor" y "gracias" cuando quieras algo?
   - ¿Pensaría que siempre esperaría a que te toque, aun cuando fueras mayor?

4. Imagina que alguien te vio quitarle una pelota a otro niño. Es posible que diría que eres/estás antipático.
   - ¿Cómo explicaría por qué quitaste la pelota?
   - ¿Si otro niño estaba construyendo una torre con bloquecitos, pensaría que derribarías la torre también?
   - ¿Pensaría que le quitarías la pelota el próximo día también?

Para este juego, quiero que tú me cuentes unos cuentos. Te mostraré unos dibujos de niños y me puedes decir qué piensas de ellos.
1. Mira a Sara jaleándole el cabello a su hermana. Cuéntame algo sobre Sara. ¿Por qué le jalea el cabello a su hermana?
2. Mira a Marcos ayudando a un estudiante nuevo. Cuéntame una historia sobre Marcos. ¿Por qué ayuda al estudiante nuevo?

Ahora, quiero que me cuentes unos cuentos más. Si alguien que no te conoces te vio un día, ¿qué tipo de cuento contaría sobre ti? *(Solamente se preguntará uno de estos dos preguntas)*
1. ¿Recuerdas la última vez que ayudaste a alguien? ¿Qué pasó? ¿Si alguien que no te conoces te vio haciendo esto, que diría sobre ti?
2. ¿Recuerdas la última vez que alguien se enojó contigo? ¿Qué pasó? ¿Si alguien que no te conoces te vio haciendo esto, que diría sobre ti?

Appendix I
Debriefing Form for Parents of English-Speaking Participants

Language and Correspondence Bias
Debriefing Form

The purpose of this study is to examine the nature of social judgments made by speakers of English and Spanish. More specifically, it aims to reveal potential cross-linguistic differences in the fundamental attribution error (also known as the correspondence bias or attribution theory). This theory states that we tend to make *dispositional* attributions for others' behavior (that is, we say that other people act the way they do because of their personalities), while making *situational* attributions for our own behavior (we believe our actions are shaped by events that happen to us). In Spanish, there are two verbs (*ser* and *estar*) which represent the English verb *to be*. *Ser* suggests permanent, unchanging qualities, while *estar* usually indicates more transitory ones. What this study aims to discover is whether the existence of the verb *estar* in Spanish makes speakers more aware of the temporary nature of others' traits, and thus perhaps less likely to assume that other peoples' actions are indicative of permanent qualities. In the same vein, Spanish speakers may also be somewhat less prone to make situation-based attributions about themselves.

This research is experimental, with participants divided into three groups: English-only speakers will naturally make up the *to be* group, while Spanish speakers will be divided into two groups in which they are primed with either the verb *ser* or *estar.* Children's responses to the measures will be coded as either situational or dispositional, and statistical analyses will be performed to examine the relationship between the verb form used and the types of attributions made by participants. As much of the existing research on this important psychological theory has been conducted only with speakers of one language, the findings of this study may uncover significant advantages of being bilingual in the social realm.

To learn the results of this study or for any questions pertaining to it, please contact the researcher, Mary Dixon, at mdixon12@wooster.edu.

Thank you for your participation in this research;
your contribution is important to the success of this study.

Appendix J
Debriefing Form for Parents of Spanish-Speaking Participants

Lenguaje y el sesgo de la atribución
Resumen

La meta de esta investigación es examinar unas diferencias entre las determinaciones e inferencias sociales entre los niños hablantes del inglés y español. En particular, quiere averiguar si hay contrastes entre los dos grupos en la producción de la sesgo de la atribución, una teoría psicológica que dice que solemos atribuir las acciones de otras personas a sus personalidades (o sea, a calidades que no cambien), mientras atribuimos nuestro propio comportamiento a eventos externos. Sin embargo, propongo que la existencia del verbo *estar* en el español (que sugiere estados temporales, y que no tiene igual en el inglés) ayuda a los hispanohablantes a hacer estas juicios sociales, haciéndolos de una manera más precisa y matizada. Según esta hipótesis, puede ser que los hispanohablantes serán menos dispuestos a decir que las acciones de otras personas indican rasgos inmutables, y además menos propensos a afirmar que sus propias acciones son los resultados de factores situacionales.

Esta es una investigación experimental, con los participantes divididos en tres grupos distintos. Los hablantes de ingles forman su propio grupo, mientras los hispanohablantes se dividirán en dos: uno para el verbo *ser* y otro para el verbo *estar*. Por cada niño, anotaré si usa más explicaciones de atribución situacional o la de disposición. Cuando tengo hecho las pruebas de todos los niños, analizaré los resultados estadísticamente, para averiguar si hay una relación entre el verbo usado y el tipo de atribución producido. Como la mayoría de las investigaciones de esta teoría solamente han examinado hablantes de un solo idioma, los hallazgos de este estudio podrían mostrar unas ventajas significantes de ser bilingüe en el mundo social.

Para aprender los resultados de esta investigación o para hacer cualquier pregunta, póngase en contacto con la investigadora, Mary Dixon, por correo electrónico: mdixon12@wooster.edu

Muchas gracias por su participación;
su contribución ayuda mucho la realización de este investigación.

Appendix K
Translation of Debriefing Form for Parents of Spanish-Speaking Participants

Language and attribution bias
Summary

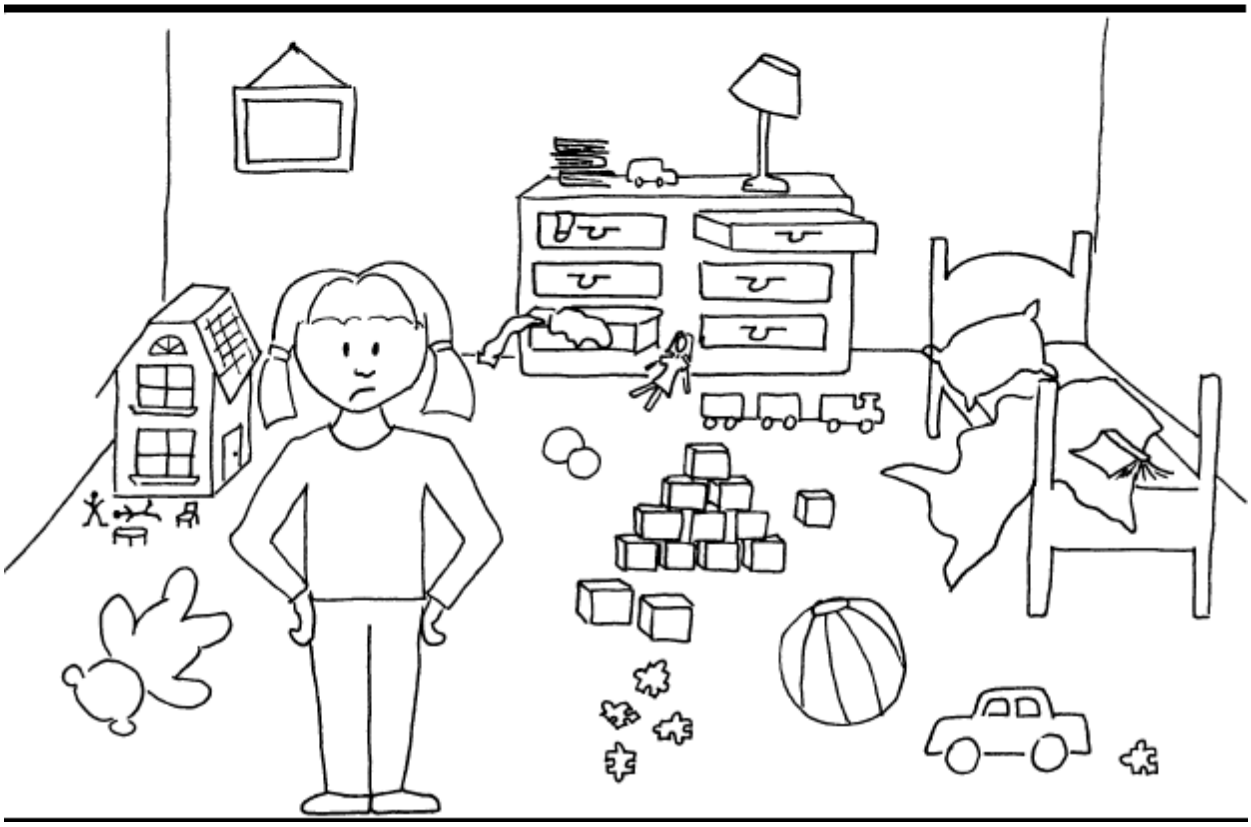
The goal of this study is to examine differences between social judgments and inferences of speakers of Spanish and English. In particular, it aims to find out if there are contrasts between the two groups in the use of the attribution bias, a psychological theory that states that we tend to attribute other peoples' actions to their personalities (which are considered unchanging qualities), while we attribute our own behavior to external events. However, I propose that the existence of the verb *estar* in Spanish (which suggests temporary states, and has no direct translation in English) helps Spanish speakers to make these types of social judgments, and to make them in a more precise, nuanced way. According to this hypothesis, it may be that Spanish speakers will be less likely to say that others' actions indicate unchanging traits, and also less prone to say that their own actions are the result of situational factors.

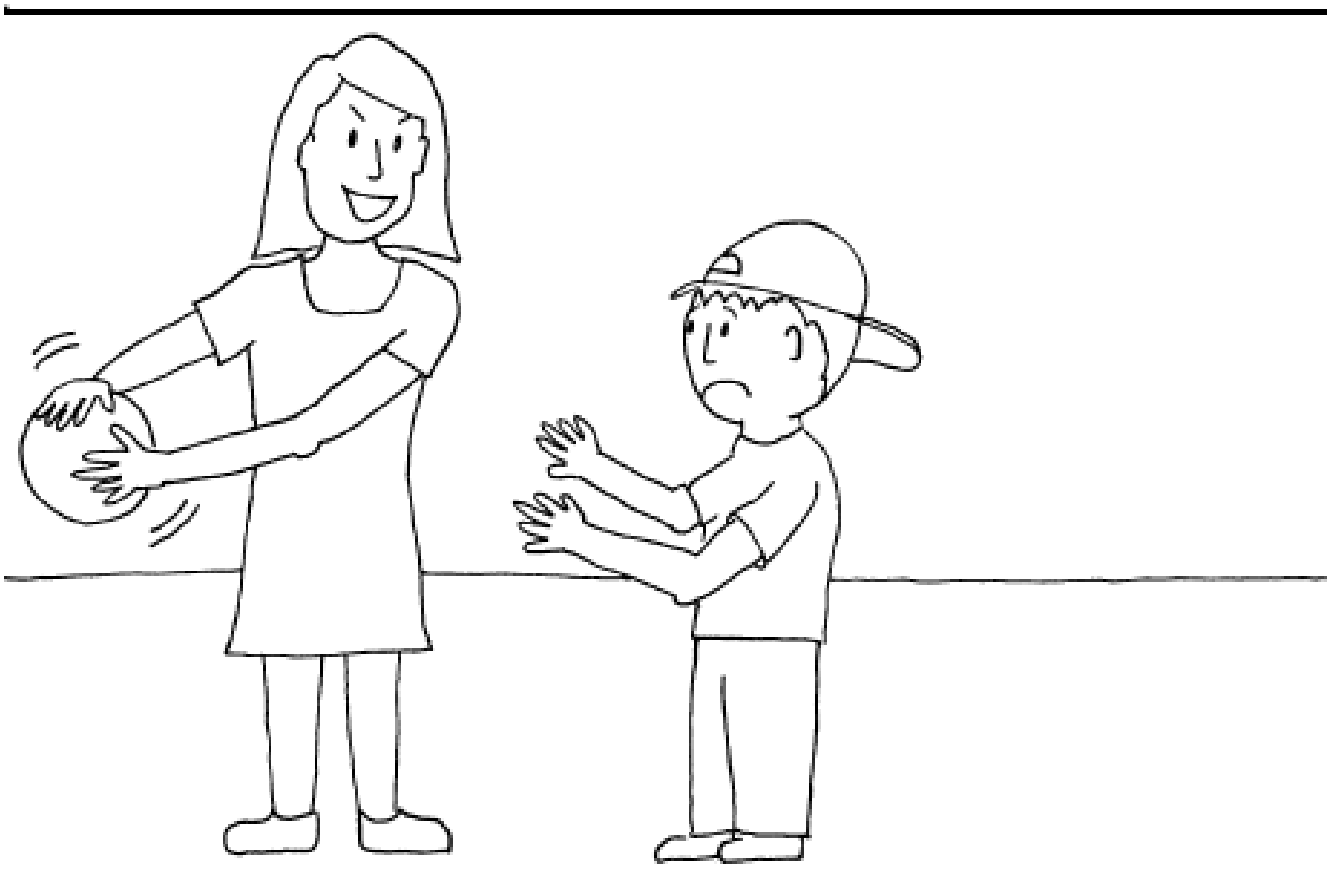
This research is experimental, with participants divided into three different groups. Speakers of English will form their own group, while Spanish speakers will be divided in two: one for the verb *ser* and one for *estar.* For each child, I will record if he or she uses more explanations indicating situational or dispositional attribution. When I have completed all of the children's tests, I will statistically analyze the results to find out if there is a relationship between the verb used and the type of attribution produced. As the majority of research into this theory has only examined speakers of one language, the findings of this study could reveal significant advantages of being bilingual in the social world.

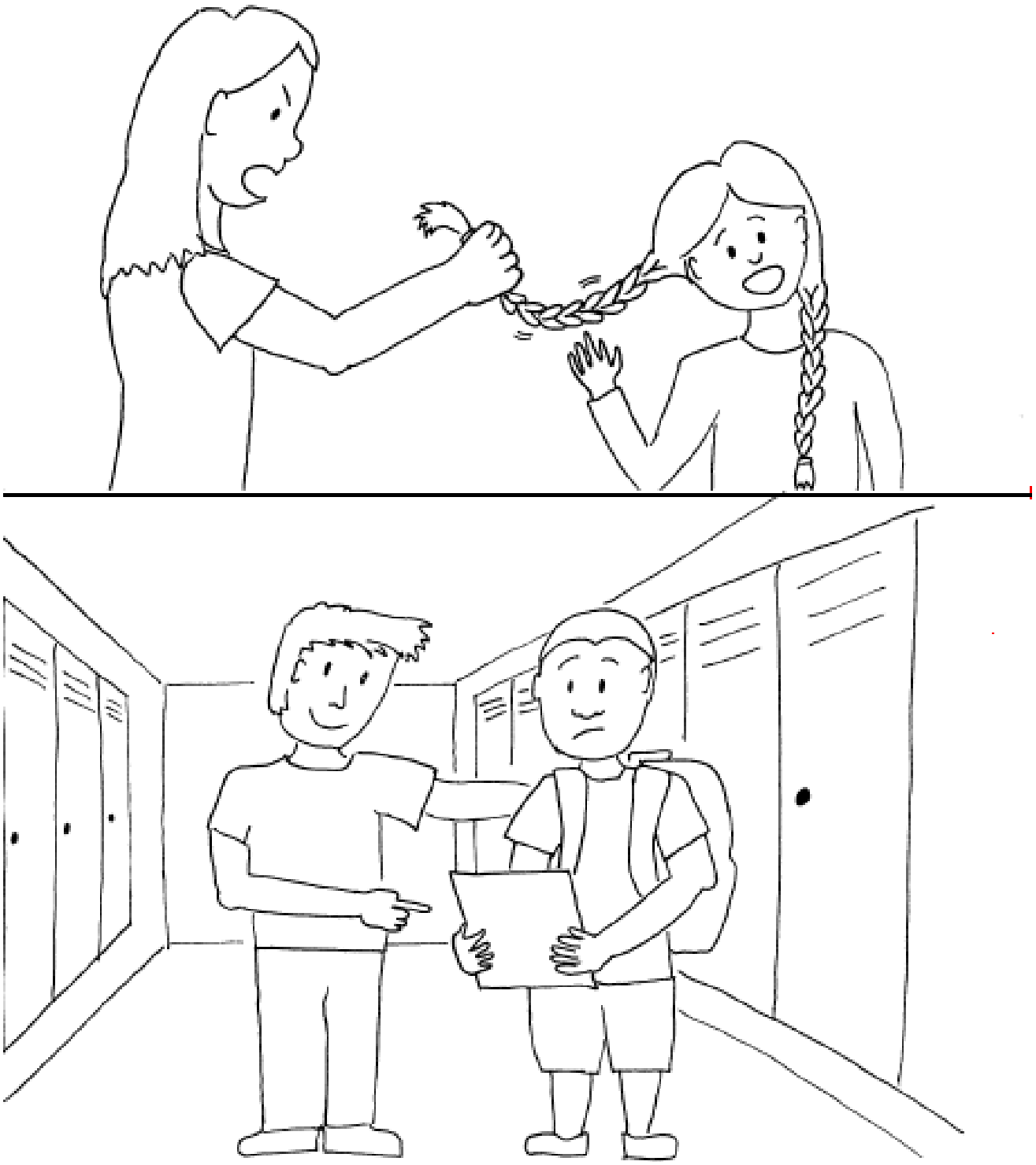
To learn the results of this study or to ask any question about it, get in touch with the researcher, Mary Dixon, by e-mail: mdixon12@wooster.edu.

Thank you for your participation; your contribution is a great help to the fulfillment of this study.

Appendix L
Stimulus Images Used in Testing







Appendix M
Data Coding Form Used by Researcher

Participant #: _____
Age: _____
Sex: _____
Condition (S/E/B): _____

Inference Task
Other-judgment
1. Washing dishes
Ser score: _____ Disposition score: _____
Estar score: _____ Situation score: _____
Total attribution score: _____

2. Messy room
Ser score: _____ Disposition score: _____
Estar score: _____ Situation score: _____
Total attribution score: _____

Self-judgment
3. Waiting in line
Ser score: _____ Disposition score: _____
Estar score: _____ Situation score: _____
Total attribution score: _____

4. Taking ball
Ser score: _____ Disposition score: _____
Estar score: _____ Situation score: _____
Total attribution score: _____

Story task
Other-judgment
5. Pulling hair
Ser score: _____ Disposition score: _____
Estar score: _____ Situation score: _____
Total attribution score: _____

6. New student
Ser score: _____ Disposition score: _____
Estar score: _____ Situation score: _____
Total attribution score: _____

Self-judgment
7. Helping someone
Ser score: _____ Disposition score: _____
Estar score: _____ Situation score: _____
Total attribution score: _____

8. Made someone angry
Ser score: _____ Disposition score: _____
Estar score: _____ Situation score: _____
Total attribution score: _____

Appendix N
HSRC Review Application

The College of Wooster Human Subjects Research Review Application

As part of the goal of protecting humans who participate in research conducted at The College of Wooster faculty, staff, and students both on and off campus, The College of Wooster complies with federal policy for the protection of human subjects (Department of Health and Human Services Policy for Protection of Human Research Subjects). This form is used by The College of Wooster's Human Subjects Research Committee to assure compliance with federal guidelines and, more generally, to assure that participants in research are treated ethically.

Before you complete this form you are to read carefully The College of Wooster's Policy on Protection of Human Subjects. Copies are available from Gary Gillund (e-mail ggilund) or your department or program chair.

The following form must be completed before conducting any research with human subjects. In addition, no research may be conducted until an application has been approved by the HSRC. Please complete the form completely, accurately, and clearly. You may type your responses to most items directly on this form. Occasionally you are asked to attach additional pages.

Return the completed form to the area reviewer for your department or program. The area reviewers are listed at the end of this document.

If you think your research may fit in the category of Exempt from Review, please use the HSRC Exempt Review Form.

The HSRC will make every attempt to provide you with information on the status of your application within two weeks of submission.

Researcher's Name: Mary Dixon

Researcher's email and campus addresses: mdixon12@wooster.edu, Box C 1445

Adviser's Name (if primary researcher is a student) Claudia Thompson

Department or Program: Psychology

College of Wooster __ Faculty __Staff _x_ Student __ Other, please describe

Current Date: 10/10/2011

Proposed Starting Date of Research: October 2011

Proposed Completion Date of Research: March 2012

Title of Research Project A Comparison of English- and Spanish-Speaking Children's Susceptibility to the Correspondence Bias

Abstract: Please provide, in terms the average person can understand, a concise summary (150 words or less) of the proposed research.

Spanish- and English-speaking children's tendencies to exhibit the correspondence bias will be examined. Previous research has revealed that the Spanish verb *estar*, which tends to imply temporary qualities, (in

contrast to *ser*, which suggests permanent ones) affects children's reasoning both about real vs. apparent properties and stability of others' psychological characteristics. The present study was interested in discovering whether the correspondence bias, or tendency to provide situational attributions for one's own behavior and dispositional attributions for the behavior of others, would be mediated by the existence in Spanish of two forms of the verb *to be*.

Research Subjects

Expected number of subjects 60

Age range of subjects 6-10 years old

Population to be studied: Students at Wooster, Ohio public elementary schools; Children of Latin American immigrants living in Orrville, Ohio

How will potential subjects initially be contacted (Please attach copies of ads, recruitment forms, etc.): To reach English-speaking participants, the superintendent of Wooster City Schools will first be contacted. Arrangements will then be made with principals and teachers at particular Wooster schools. Spanish speakers, in contrast, will be contacted more informally, initially through a flyer distributed at a community gathering, as well as through contact with Jenny Derksen, a College of Wooster employee who also works extensively with the area's immigrant population.

Please state how the subject's confidentiality will be protected: Upon arrival for testing, each participant will receive a number, assigned in chronological order. Only participants' first names and ages will be recorded during testing, and after testing is complete, individual results will be associated only with participant numbers.

What direct or indirect benefit to the research subjects may result from this study? None, though the study may reveal cognitive advantages of speaking the Spanish language.

Is any deception involved in your research? If so, please explain and justify the deception. None

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Written consent document.

If you do not plan to use a consent form, please attach an explanation and justification.

The written consent document should be typed on a separate page and attached to this application. It should be simply written so that it can be easily understood by the average person. Do not use technical jargon or abbreviations. The following basic elements must be included.

1. A statement that the study involves research, and explanation of the purposes of the research, the expected duration of the subject's involvement in the research, a description of the procedures to be followed, and identification of any procedures that are experimental.

2. A description of any reasonably foreseeable risks or discomforts to the subject.

3. A description of any benefits that may reasonably be expected from the research.

4. A statement describing the extent to which confidentiality of records identifying the subject will be maintained.

5. A statement that participation is voluntary, that the subject may refuse to participate, and that either the subject or the researchers may discontinue the study at any time with no adverse consequences.

6. A statement advising subjects that if they have any questions about the research, or their rights, they may contact you. Your name and telephone number must be included.

7. Signature lines should be included for the subject, the subject's parent or guardian if the subject is under 18 years of age or otherwise incompetent, and a line for the date.

Research protocol.

Briefly describe the background information of your study, the specific aims of your research, the data analysis procedures, the location where the research will be conducted, and with whom the data and/or conclusions will be shared. **Describe the research methods and procedures you will employ in detail**. Please attach copies of questionnaires, tests, etc.). You may attach separate sheets if you prefer.

Funding support for the study (check one of the statements below):

_x_ This research is unfunded and will be conducted even if there are no funds.

__ Funding is pending, but the research will be conducted even if the funding is not approved. Identify the potential funding source

__ Funding is pending and the project will not begin until funds are available. Identify the potential funding source

__ The research is funded. State the funding source

Questions to determine the category of review.

Part A

1. Does the research involve as subjects prisoners, fetuses, pregnant women, the seriously ill, or mentally or cognitively compromised adults?

   __ Yes _x_ No

2. Does the research involve the collection or recording of behavior which, if known outside the research, could reasonably place subjects at risk of criminal or civil liability or be damaging to the subject's financial standing, employability, or reputation?

   __ Yes _x_ No

3. Does the research involve the collection of information regarding sensitive aspects of subjects' behavior (e.g., drug or alcohol use, illegal conduct, sexual behavior)?

   __ Yes _x_ No

4. Does the research involve subjects under the age of 18 (except as they are participating in projects that fall under categories 1, 3, 4, and/or 5 in Part B on the following page)?

   _x*_ Yes _x*_ No

   *See Part B, Category 1

5. Does the research involve deception?

__ Yes _x_ No

6. Do the procedures of this research place the subject at any foreseeable risk (above what would be expected in everyday activities)?

   __ Yes _x_ No

Part B

1. Will the proposed research be conducted in established or commonly accepted educational settings and involve normal educational practices (e.g., research on regular and special education instructional strategies, research on instructional techniques, curricula, or classroom management methods)?

   _x*_ Yes _x*_ No

   *This study will examine two distinct populations: English- and Spanish-speaking children. As English speakers are in the majority in Wooster, Ohio, they should be readily recruited in tested via the public school system. Spanish speakers, in contrast, are a much sparser population, and will thus be tested outside of a traditional educational setting. The researcher will attempt to simulate the school setting for the Spanish-speaking children as much as possible, however, conducting tests, for example, in a small classroom located inside a local church or community center.

2. Does the proposed research involve the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, where information is recorded anonymously (i.e., so that the human subject cannot be identified, directly or indirectly through identifiers linked to the subject)? [NB: All survey/interview/observational research in which elected or appointed public officials or candidates for public office serve as subjects is exempt, whether or not data collection is anonymous.]

   _x_ Yes __ No

3. Does the proposed research involve the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens? These sources must be either publicly available or the information must be recorded anonymously (i.e., in such a manner that subjects cannot be identified, directly or through identifiers linked to the subject).

   __ Yes _x_ No

4. Is the proposed research (including demonstration projects) to be conducted by or subject to the approval of federal department or agency heads, and designed to study, evaluate, or otherwise examine (i) public benefit or service programs (e.g., social security, welfare, etc.); (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs?

   __ Yes _x_ No

5. Does the proposed research involve taste or food quality evaluations or consumer acceptance studies, where the tested products are wholesome foods without additives, or foods which contain additives at or below levels found to be safe by the FDA or approved by the EPA of the Food Safety and Inspection Service of the U.S. Department of Agriculture?

   __ Yes _x_No

I have read and agreed to abide by the requirements contained in the statement of principles governing the protections of the rights and welfare of human subjects promulgated by The College of Wooster.

Researcher Signature _____ Date _____

For Faculty Advisors of Student Research:

Federal guidelines mandate that research be of sufficient merit to justify the participation of human subjects. The HSRC prefers to confer most of the responsibility for determining merit to advisors. Please sign below and check a box to help us evaluate the merit of the student application.

Adviser signature: _____

__ I have discussed the proposed research with the student applicant named above and find the research to be of sufficient merit to justify the use of human participants.

__ I have discussed the proposed research with the student applicant named above but have made no determination of merit.

__ I have discussed the proposed research with the student applicant named above and find the research is ***not*** of sufficient merit to justify the use of human participants.

Completed applications may be sent to any committee member:
Gary Gillund, Chair of the HSRC, Psychology Department
Joan Furey, Communication
Stephanie Strand, Biology
Bryan Karazsia, Psychology
Ellen Falduto, Information and Planning
Dorothy Brown, Off-campus representative