

Linguistic Relativity: Enduring Ideas about Language, Culture, and Thought

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Abstract

Linguistic relativity, as conceptualized by Benjamin Lee Whorf, is a theory concerning the relationship between language and thought in the minds of speakers. Linguistic relativity posits that not only does language casually impact thought, but that different languages casually impact thought in different ways. Whorf's ideas about language, though fascinating, have been thoroughly scrutinized by linguists and psychologists alike. Though linguistic relativity suggests a causal connection between language and thought, research on this proposed connection is strictly limited to correlational data. There has been no strong empirical evidence to substantiate Whorf's hypothesis to date, leaving little substance to support this overarching theory. Despite this lack of evidence, linguistic relativity continuously appears in the literature across many disciplines. Recent emphasis on highlighting multiculturalism in academia, especially in anthropology, has seen the return of linguistic relativity to general discussions of cross-cultural differences. The persistence of Whorfian ideas in the humanities is analyzed through a Kuhnian lens, as linguistic relativity's popularity fluctuates in line with larger cultural trends.

Keywords: linguistics, psychology, linguistic relativity, Whorfian hypothesis

Linguistic Relativity: Enduring Ideas about Language, Culture, and Thought

Does language intrinsically impact the way that we think? Does language reflect culture, or does a culture become influenced by the tendencies of a language? Do different linguistic communities think about the world differently as a result of the language they share? These questions are at the forefront of the theory of linguistic relativity, originally proposed by linguist Benjamin Lee Whorf in the 1930s. Whorf posited that the categories imposed on us by our native language impact how we understand the world itself, leading speakers of different languages to hold perhaps incommensurable worldviews. In a now famous 1956 paper, “The Relation of Habitual Thought and Behavior to Language,” Whorf pondered these questions and the larger role of language in shaping our experiences:

Are our own concepts of ‘time,’ ‘space,’ and ‘matter’ given in substantially the same form by experience to all men, or are they in part conditioned by the structure of particular languages? Are there traceable affinities between cultural and behavioral norms and large-scale linguistic patterns? (p. 138)

Whorf’s radical conception of language and mind has wide implications for a variety of disciplines, as he suggests that language shapes even our most basic understandings of abstract concepts like time, existence, and reality. Thus, linguistic relativity has haunted the fields of linguistics, anthropology, philosophy, and psychology since his ideas gained popularity through the 20th century. Given that this theory has maintained relevance for an entire century since its original proposal, one must consider *why* Whorf’s ideas have captured us. His ideas speak to the intimate connection between language and thought, resonating with many who agree that language is vital in one’s perceptions of their external world. The literature surrounding the Whorfian hypothesis is abundant, with a substantial portion consisting of attempts to produce psychological evidence that may prove a genuinely differential impact of language on thought across speech communities. Despite fervent persistence from Whorfian supporters, research on

linguistic relativity is inherently limited by confounds. Any study that aims to prove this idea true will be both cross-sectional and correlational, leaving questions about the validity of any conclusions to be made. Nevertheless, linguistic relativity remains as a persistent theory on the extensive influence of language.

Linguistic relativity has possessed the interests of scholars and students alike, as many agree that Whorf's ideas provide us with a meaningful lens to understand differences between populations. Though linguistic relativity may merely overstate the influence of culture itself and fallaciously attribute these effects to language, Whorfian ideas are specifically widespread within the field of anthropology. Both linguistic relativity and a more generalized relativism have become increasingly popular in a variety of disciplines. Despite being largely unsupported by empirical evidence, Whorf's ideas are uniquely complementary to the recent push towards emphasizing multiculturalism and individual experience. Thus, we see discussions of linguistic relativity reappear continually across both academic sources and in popular media, as we seem to find this deterministic concept perpetually intriguing at both the individual and collective levels. The endurance of Whorfian ideas represents an overarching trend of Kuhnian conceptual circularity within the social sciences, since this idea is never fully dismissed and revived when culturally convenient.

Literature Surrounding Linguistic Relativity

Before delving into linguistic relativity, it will be useful to first establish some steady definitions and distinguish it from a related idea about language in mind. Linguistic relativity includes multiple assumptions about the role of language in thought, combining to create the overall Whorfian thesis. Whorf first proposed that thought itself is in the form of natural languages, assuming the structure of our native tongue. Next, he claimed that each language

forges a cognitive view of reality that is unique, meaning that different languages have such distinct underlying structures that they organize thought in completely different ways (Devitt & Sterelny 1990). Whorf's own view on the supposed causality of this relationship is shaky and unclear, as his later works seem to shy away from suggesting that language causally impacts thought. Nonetheless, his ideas have been taken to represent an overall causal claim, such that the language that one speaks differentially determines their thought compared to speakers of another language. Linguistic relativity must be distinguished from the concept of linguistic determinism, which limits itself to the sole claim that language can causally shape the way that we perceive the world (Field 2004). These ideas are closely interrelated, as linguistic relativity implies and relies on linguistic determinism. The difference is that Whorf's linguistic relativity goes beyond mere determinism by claiming that not only can language influence thought, but that different languages influence thought in meaningfully different ways.

Now that these terms are clear, we may begin to analyze linguistic relativity from its source. Benjamin Lee Whorf was a self-taught linguist who conducted years of fieldwork on Mesoamerican languages during the 1930s. His inspiration for the theory of linguistic relativity came from his earlier work as a fire insurance inspector, where he noticed that the tendencies of language usage seemingly had an impact on how people thought about and interacted with their world. He describes an example of this in "The Relation of Habitual Thought and Behavior to Language," where he remarked on the careless treatment of gasoline drums that were labeled as being "empty." Here, he comments on so-called "empty" gasoline drums that had no liquid gasoline in them but which still contained explosive vapor, making them perhaps more dangerous than the filled ones. Despite this, he consistently reported on reckless behavior around these "empty" drums that frequently caused massive fires. Workers would seldom restrict their

cigarette smoking around the “empty” drums, which Whorf ascribed to the typical connotative meaning of the word “empty.” He points out that “empty” suggests “containing nothing, vacant, void,” which in this context was often taken to mean “non-hazardous,” leading to habitually careless behavior around these “empty” drums (Whorf 1956). Here, he argued that the meaning and usage of English terms influenced its speakers to specifically attend to different features of their environment. These basic connections between language, thought, and behavior motivated Whorf to further pursue linguistic study of various natural languages.

Whorf based the majority of his claims of linguistic relativity on his descriptive work on Mesoamerican languages, specifically the Nahuatl and Hopi languages. His study of Hopi supposedly revealed a grammar system that was markedly different from what he called standard average European (SAE) languages, and he argued that the Hopi language structure reflected their distinct metaphysical understanding of the world. Most notoriously, Whorf claimed that the Hopi grammar conveyed a completely unique understanding of time that avoided objectification of time into discrete units. Whereas an English speaker would conceptualize time as being divisible into consistent units of seconds, minutes, hours, and days, this would be completely foreign to the Hopi speaker, who conceptualizes time as a constant, continuous process of “getting later.” The Hopi language does not make use of plural nouns for non-physical referents like English units of time (“ten days”), instead opting for ordinal numbers with singular nouns. Where an English speaker would say, “He left after ten days,” a Hopi speaker would say something equivalent to “He left after the ninth day,” supposedly displaying a unique conceptualization of time under Whorf’s understanding. Thus, he argued that the features of the Hopi language actively influenced its speakers to attend to different aspects of objective reality. Whorf expressed his views on language structure and thought in a variety of papers, but perhaps

conveyed his linguistic dogma most succinctly in “Science and Linguistics” (1956):

We dissect nature along lines laid down by our native languages. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face; on the contrary, the world is presented in a kaleidoscopic flux of impressions which must be organized by our minds—and this means largely by the linguistic systems in our minds. We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way—an agreement that holds throughout our speech community and as codified in the patterns of our language. (p. 213)

This excerpt exemplifies how Whorf’s views on language and thought were strikingly intertwined with his metaphysical ideas about how we principally experience the world.

Linguistic relativity proposes that the categories and tendencies of our native language influences our thought processes in ways that are largely unbeknownst to us, by shaping the way experience itself is processed in our minds. It should be mentioned that Whorf’s ideas, though intriguing, are seriously undermined by a lack of evidence beyond his own descriptive linguistic data and anecdotal accounts. Since the publication of his works in the 1950s, his ideas have sparked widespread dissent across disciplines since his thesis inherently has groundbreaking implications for the social sciences if it is taken to be true. Therefore, a plethora of cross-cultural research has sprung up since Whorf’s time to determine whether this radical notion of language and thought could possibly be correct.

Returning to the earlier distinction between linguistic relativity and linguistic determinism, it should be clear that any evidence supporting either concept must be cognitive in nature. Studies aiming to isolate linguistic determinism are restricted to a single language, whereas studies of linguistic relativity must compare thought across two different language communities. In order to make any significant conclusions on the Whorfian hypothesis, we must reveal a genuine cognitive difference between speakers of different languages rather than merely pointing towards descriptive linguistic differences. Additionally, researchers must be mindful of

the experimental tasks utilized in such studies, since this topic specifically requires measures of cognition. A research design that prompts participants to convert their thoughts into expressive language would obscure any psycholinguistic conclusions to be made in support of Whorf. As a result, research on linguistic relativity must be nuanced and include a non-linguistic measure of cognitive processes. Since linguistic relativity is conceptually dependent on linguistic determinism, let us first address the line of research aiming to prove linguistic determinism.

Research on Linguistic Determinism

Much of the early research on both linguistic determinism and linguistic relativity has fixated on the realm of color perception, since color exists in a continuous, undivided spectrum of light which we cut up with our distinct color terms. Anthropologists have established that different cultures cut up the color wheel along different boundaries, meaning that there exists a global variation in how individuals perceive color based on their language's color distinctions. Moreover, cognitive processes regarding color perception may be measured without activating participants' expressive language, making this an optimal area of cognition to investigate the connection between language and thought. Research addressing color perception tests at the lexical level of language, since color is generally coded by means of single-color terms. Thus, we reference specific shades of color by using terms like "red" or "yellow," rather than by some kind of morphological marking. As a result, researchers have focused on studying how different colors are referred to and how certain color terms are more frequently called upon by speakers of a given language. In a landmark study by Brown & Lenneberg, researchers aimed to compare color terms that are more commonly used by English speakers with those not utilized as frequently. In English, speakers are more likely to use the term "red" than the term "dark vermilion"; "red" is a basic primary color in the minds of English speakers whereas "dark

vermilion” may be thought of as a combination of multiple colors. Here, the authors aimed to identify colors that are highly codable, which are typically labeled with only a single word (“red”) instead of a longer phrase (“dark vermilion”). Brown and Lenneberg found that Munsell colors labeled by single words were named more quickly by English speakers and that participants formed a reliable consensus on what color terms should be used. After identifying 24 highly codable colors, the researchers had participants complete a color recognition task where they were shown four colors, then asked to identify them from a selection of 120 colors after a brief interval. They found that color codability was significantly correlated with performance on the color recognition task, meaning that colors most closely identified with basic English color terms like “red” were more easily remembered and identified by English speakers (Brown & Lenneberg 1954). This study provides strong fundamental evidence for linguistic determinism, as the lexical pattern of English color terms was shown to have an impact on both short-term memory and color recognition. The terms more frequently used by English speakers were more easily stored into memory by the participants, allowing them to more accurately identify the colors associated with them. This study shows how the lexical features of a language may impact non-linguistic processes of cognition.

Despite the seemingly compelling evidence for linguistic determinism provided by Brown and Lenneberg, anthropological research has called the applicability of these results into question. Findings published by Berlin and Kay suggest that despite differences in color terms across languages, there exist cross-cultural universals in basic color terms. In a 1969 text, the researchers define basic color terms as being widely applicable, reliably used by speakers, and consisting of only one word (like “red” in English) (Berlin & Kay 1969). Including roughly 100 different languages into their sample, Berlin and Kay found that there are around 11 basic color

terms across all languages. English uses 11 color terms, with three achromatic (“black,” “white,” “gray”) and eight chromatic (“red” through “pink,” plus “brown”). Also, they found that these universal basic color terms seemed correlated with focal colors, or shades perceived as being the best examples of each basic color term. Thus, the development of basic color terms may have a cognitive basis such that our brains may be hardwired towards perceiving these standard shades. This proposed universality casts doubt on the Brown and Lenneberg results by undermining their measure of linguistic color codability. If there are perceptually salient colors that are universal, then perhaps the colors determined to be highly codable by Brown and Lenneberg are simply these colors that we are more suited to perceive. If this is true, then the increased ability for color recognition of codable colors may not be because they are more frequently named by language, but rather because our minds are simply better at perceiving them and recalling them in memory. The uncertainty generated by Berlin and Kay’s findings reflects how research on language and thought is often scrutinized across disciplines, as discoveries of cognitive universals frequently weaken claims made for both linguistic determinism and linguistic relativity.

Berlin and Kay’s research on focal colors prompted many to reconsider the original Brown and Lenneberg conclusions, leading to a variety of attempts at replicating those results. Multiple studies through the 1970s aimed to prove that focal colors were simply easier to remember across all languages and cultures. A study by Lucy and Shweder reported that given a fair array of focal and nonfocal colors, both types were remembered equally well, weakening the support for linguistic determinism (Lucy & Shweder 1979). A later study by Garro did not succeed in replicating these results (Garro 1986), though that study restricted conversation during the interval between exposure to target colors and the identification portion of the task. The 1979 Lucy and Shweder study did *not* restrict this, thus they repeated their design again in

1988 to manipulate whether the experimenter would engage the participant in conversation during this interval. It is important to note here that for the conversation permitted condition, the experimenter initiated and topics were confined to mundane, unrelated matters to serve as a consistent distractor for the participants. Here, they found that memory for focal colors was significantly influenced by the presence of conversation, such that engaging in conversation during the filler interval decreased participants' color recognition accuracy (Lucy & Shweder 1988). Interestingly, memory for nonfocals was largely unaffected by the presence or absence of conversation, pointing to a more complicated relationship between language and color memory than what was originally proposed. Lucy and Shweder note that their study cannot provide any explanation for this effect, yet they offer two possible routes for why memory for focals was influenced by conversation. Relating to the Berlin and Kay findings, if focal colors are more perceptually salient, then we should expect them to be stored better as visual memories and minimally impacted by verbal interference. Despite this expectation, memory for focals may be aided by focused visualization, meaning that conversation might have interrupted participants' ability to focus on these visual images. On the contrary, memory for focals may be better aided by verbal strategies, like remembering the target color as being "pure red" instead of just "red." This verbal method of memorizing the focal colors may have been what was truly interrupted by the conversation distractor. The primary mechanism for focal color recognition remains unclear, but these results contribute to the diverse literature surrounding language's impact on thought. Additionally, Lucy and Shweder asked participants follow-up questions about their individualized memory strategies and verbal strategies were reported as the most common approach for accurate memorization. Thus, language effects on cognition are far from unsupported, yet the exact process by which one's language influences various cognitive

processes is still unclear. The progression of research on color perception points to some underlying influence of language on thought.

Though color perception and memorization were originally thought as a perfect candidate for demonstrating the impact of language on cognition, we still lack a clear picture of exactly how language impacts this non-linguistic domain. More recent psycholinguistic studies have identified an additional area that may be heavily shaped by the linguistic patterns of a given language: conceptual metaphor. Cognitive psychologists now recognize that our mind's way of organizing and representing experience is highly pragmatic and integrated, such that multiple areas of cognitive processing may be connected to one another. Our conceptual system is thoroughly dependent on using metaphors to represent experience, especially abstract experience that is otherwise difficult to conceptualize. Lakoff and Johnson established this metaphorical tendency of our conceptual schemes in 1980, arguing that we can observe three general types of metaphors to understand the world (Lakoff & Johnson 1980). First, we may employ orientational metaphors by using linear/spatial relations to consistently represent an abstract idea. For example, English speakers represent increased quantity as being "up" ("Sales are up this year"), as well as good things ("My spirits are high"). Second, we use ontological metaphors when we represent an abstract concept in terms of a physical entity. We often speak of the mind as being a container ("That tune is stuck in my head"), or we represent emotions as being like liquids ("She's overflowing with joy"). Finally, we may use structural metaphors when we simply represent one kind of experience in terms of another, like when we equate understanding with seeing ("I see your point") or life itself with a gambling game ("I'll take my chances"). Given these various paths of metaphorical mental representation, we can see how the language employed by our mind is vital since metaphors are expressed verbally and rely on specific

concepts within a given language.

The mere fact of our mental representations being connected to a linguistic device like metaphor does not necessarily prove that language impacts thought, but it suggests that these patterns of understanding may be mirrored in our non-linguistic cognitive processes. A set of experiments by Casasanto and Boroditsky aimed to generate evidence for this kind of linguistic impact on non-linguistic processing, focusing on the use of spatial metaphors in the minds of English speakers. The English language typically represents time through representations of distance, such that time moves in across a horizontal axis from left to right. Highlighting this kind of representation may seem redundant and obvious to us, since we also read English from left to right, but not all languages share this feature of spatial representation of time. Thus, English speakers asymmetrically connect these two concepts, since duration of time is represented using distance, but not vice versa. Casasanto and Boroditsky conducted six different experiments to test whether English speakers' estimates of distance and duration were similarly asymmetrically dependent. Given the pattern we observe in language, an effect of linguistic determinism would mean that distance should influence estimates of duration more than duration influences estimates of distance. Participants viewed lines that increased to varying lengths for varying durations and were asked to either estimate the distance of the line or the duration it took to increase to its maximum length after it disappeared. As a result, both the spatial information and temporal information served as possible distractors since they did not know what aspect they would be asked to estimate in advance. The researchers found that spatial displacement significantly affected duration estimates, but duration did not affect spatial estimates (Casasanto & Boroditsky 2008). Additionally, they repeated the experiment five more times to address various possible confounds, including the possibilities of a selective attention bias, increased

salience for spatial information over temporal information, and the motion of the lines themselves impacting spatial information. All the experiments included in this study generated robust results: spatial information significantly impacted participants' estimations of duration, but not the other way around, mirroring the asymmetrical metaphorical relationship between space and time in the English language. These results provide strong non-linguistic evidence for the impact of language patterns on our cognitive abilities since English speakers seem to internalize this spatialized representation of time and embody it even when they are not producing language themselves. Thus, we can observe language effects in two key areas of nonlinguistic cognition, namely color perception and conceptual metaphor.

Relating linguistic determinism back to linguistic relativity, we can now see more clearly how this specific cross-cultural claim depends on the conclusions made in support of linguistic determinism. The demonstrated language effects on color perception and conceptual metaphor may possibly lead to proof of linguistic relativity, but only if researchers can prove a causal relationship between language differences and cognition differences between linguistic populations. Research on linguistic relativity needs to isolate differences in a nonlinguistic cognitive domain, rather than simply pointing to descriptive differences across languages as being evidence of great differences in thought as Whorf did with Hopi. Also, linguistic relativity research must consider the nuances of conducting cross-cultural research, as experimental tasks deemed standard by researchers may bear an implicit Western bias. This means that researchers must avoid jumping to relativistic conclusions in cases where individuals from a foreign culture underperform on a task designed for Western abilities, since much of the research in this area engages with unindustrialized populations. Thus, researching linguistic relativity proves itself to be more difficult than that for linguistic determinism due to the possibility of implicit cultural

bias in experimental designs. Nonetheless, color perception and conceptual metaphor persist as suitable domains for exhibiting cross-cultural linguistic effects on cognition.

Research on Linguistic Relativity

As previously mentioned, the conclusions from Brown and Lenneberg sparked many to replicate their design, honing in on color recognition and color memory. A study from Heider and Olivier sought to compare two languages that differed in how they labeled and perceived colors in terms of their abilities for color memory. The researchers identified a language that only uses two color terms, as opposed to English's 11, spoken by the Dani people of Western New Guinea. The Dani people use the word "mili" for dark and cool-toned colors, and "mola" for light and warm-toned colors. Compared to English's separate terms for chromatic and non-chromatic colors, the Dani language not only uses dramatically fewer color terms but they structure their divisions of colors in a completely unique way. Thus, these two languages display a meaningful difference in the way they address color terms, meaning they hold potential for revealing cross-linguistic effects on cognitive processing. The researchers had Dani and English speaking participants complete both a color naming task and a color memory task like the studies previously described. Additionally, they utilized a multidimensional scaling structure technique to represent the distributions of English and Dani color naming and color memory data. Heider and Olivier hypothesized that a Whorfian effect would mean that the multidimensional structures generated for memory and naming to be similar within a single language but different between the two languages, and that equally distant colors given the same name would be confused more frequently. They found that the English and Dani color naming structures were slightly different, but the color memory structures were very similar, suggesting that no linguistic relativity effect can be seen between these two populations (Heider & Olivier 1972). On the color memory task,

Dani participants performed significantly worse than the English participants. While the Dani people made more mistakes than English speakers, both groups made the same sorts of errors. The researchers warn against taking the Dani's subpar performance as being evidence for linguistic relativity, pointing to the nearly identical multidimensional naming structures between the two populations. Perhaps the Dani lifestyle simply lacks frequent demands for memory control processes, meaning that this specific design may be weakened by a cultural bias in favor of the English participants. This line of reasoning may lead one to scrutinize the construct validity of this experimental task, but it certainly should not lead one to take these results as being unequivocal evidence for linguistic relativity.

In a closely related set of studies by solely Heider, both Dani and English speakers were asked to memorize and recognize focal and nonfocal colors in accordance with the earlier Berlin and Kay findings. Since the Dani people speak a two-term color language, here the author attempted to determine whether perceptually salient focal colors were better memorized and identified by two languages with different color naming structures. As expected, focal colors were remembered more accurately by both Dani speakers and English speakers, with English speakers displaying a superior accuracy rate compared to the Dani (Heider 1972). Heider included an additional experiment where Dani speakers were taught arbitrary names for both focal and nonfocal colors to test whether focals were learned more quickly through repeated naming tasks. Once again, we see the perceptual advantage of focal colors as Dani participants associated names with the focal colors more quickly than nonfocals, making significantly more mistakes when naming nonfocal colors. The literature seems to have completely exhausted the possibilities of demonstrating a dramatic difference on cognitive effects across languages. The Dani people conceptualize color boundaries so distinctly from English speakers, yet no

meaningful difference in color recognition has been identified beyond Dani speakers showing weaker performances on memorization tasks. Perhaps this is to be expected, as Whorf himself did not claim that linguistic relativity effects exist in the realm of color perception. Nevertheless, this domain has dominated the study of Whorfian language effects, despite having produced little cross-cultural data that suggests notable cognitive distinctions across populations.

Returning to conceptual metaphor, we may expect to see stronger evidence of linguistic relativity since this is more closely related to Whorf's original claims about the Hopi language. He suggested that SAE languages conceptualize time as being subject to objectification, reminiscent of my earlier discussion of English' horizontal spatialization of time. Some argue that Whorf's work can be seen as an early precursor to later conceptual metaphor research, as he theorized on the different ways that languages represent abstract concepts like time. Spatialization metaphors for time appear universally across languages (Traugott 1978), but different languages adopt different orientational patterns in how they represent time. While English primarily uses a horizontal "left to right" representation for time, Mandarin Chinese typically uses a vertical "up and down" metaphor to represent time. It is important to note here that each of these languages does not utilize only one type of spatiotemporal metaphor; English sometime uses vertical metaphors for time ("Let's move the meeting up a week") Thus, Boroditsky conducted a set of three experiments to test whether English and Mandarin/English bilingual speakers were cognitively influenced by their native language's method of spatializing time. The author had all participants primed with either horizontal or vertical primes, such that the target item was placed either above or ahead of another item, priming them with either horizontal or vertical spatialization. Then participants were asked to judge statements phrased in spatiotemporal terms ("March comes before April") or purely temporal terms ("March comes

earlier than April”). Boroditsky reports that both English and Mandarin speakers judged spatiotemporal phrased statements more accurately after seeing horizontal primes (Boroditsky 2001). More interestingly, when judging purely temporal phrased statements, English speakers responded quicker after horizontal primes, while Mandarin speakers responded quicker after vertical primes. These results certainly seem like evidence for linguistic relativity, as Boroditsky demonstrated a cross-linguistic cognitive effect that mirrors the patterns of each respective language. The English speakers seemed to think in English spatialization terms, benefiting from exposure to a prime that matched their languages spatiotemporal trends. Likewise, Mandarin speakers saw a benefit from being exposed to vertical primes, since this matched the vertical spatiotemporal metaphors frequently used in Mandarin.

These results seem to provide the long-awaited evidence for linguistic relativity that faithful Whorfians have waited for since first reading his works. However, I would argue given my original definitions of the two terms, these results align more closely with linguistic determinism. Linguistic relativity posits that languages structurally represent experience in widely different ways and that these differences are causally related to conflicting ways of thinking about the world in the minds of speakers. As previously mentioned, spatialization of time is not restricted to certain languages, as Whorf thought, but rather appears in all languages with variation in the specific orientation utilized. Though English and Mandarin speakers are influenced by the way that their languages represent time, does this mean that they necessarily conceptualize and experience time in contradictory ways? Both populations undeniably understand that time is a constantly progressing succession of events from the past into the future. Surely Mandarin speakers do not have any trouble keeping track of time, no more than English speakers, even though one thinks of time as moving from left to right while the other

sees it as moving downwards. Moreover, and perhaps most damning, Boroditsky's results have been greatly undermined by a 2007 study aiming to replicate and validate her claims. Chen analyzed Taiwanese digital news articles from Yahoo News and Google News for Mandarin horizontal and vertical spatial terms used to express time. The author reports that horizontal time metaphors appeared more frequently than did vertical time metaphors (Chen 2007), rendering Boroditsky's entire experiment conceptually illogical. Moreover, Chen attempted to replicate these results four separate times but found no such effect similar to Boroditsky's. Boroditsky seems to have based her cross-linguistic study on a presumptuous generalization about Mandarin Chinese that was easily denied, leaving linguistic relativity with little evidence if any. Thus, even the domain of conceptual metaphor fails to provide a compelling case of cross-linguistic cognitive differences that can be causally linked to language differences.

Can Linguistic Relativity Be Saved?

At this time, I have thoroughly exhausted the literature surrounding color perception and conceptual metaphor with regard to linguistic relativity. As evidenced by my discussion, neither of these domains have provided strong evidence of a cognitive impact of language across different cultures. However, we may consider other cognitive domains not yet mentioned here; surely color perception and conceptual metaphor are not the only areas of thought that might be influenced by unique language structures. A 1958 study by Carroll and Casagrande investigated linguistic effects on children's classification of similar objects, hypothesizing that Navajo speakers would differ from English speakers. In the Navajo language, the shapes of objects are denoted by the use of specific verb stems and this feature of their language is obligatory. Thus, a Navajo speaker may be more attuned to noticing the shapes of objects since their language devotes more attention to it. Compared to an English speaker, whose language does not require

that shapes of objects be specified, a Navajo speaker may presumably be more likely to notice shape and classify based on shape. The researchers included three groups of child speakers in this study: Navajo children who spoke mainly in Navajo, Navajo children who spoke mainly in English, and English monolingual children. The participants were presented with a reference object and two additional objects that shared a single attribute like shape, color, or size. Carroll and Casagrande hypothesized that when asked to identify which of the additional objects was most like the reference object, Navajo-dominant children would classify the objects based on shape more than the English dominant Navajo children and the English monolingual children. Their results reported just that; Navajo children who mainly spoke Navajo preferred to classify the objects based on their shape, though so did the English monolingual children (Carroll & Casagrande 1958). These conflicting results seem to subvert the researchers' original hypothesis, since they predicted that given the differences in how English and Navajo treat object shapes, these groups should differ in what attributes they prefer to classify objects based on. Adding even more ambiguity to this study, they found that the English-dominant Navajo group preferred to classify the objects based on color and not shape. In true Whorfian fashion, these results seem to generate more questions than answers as they seemingly provide evidence both for and against linguistic relativity (Rosch 1987). On one hand, the English-dominant Navajo children share the same culture as the Navajo-dominant children but differ primarily in their language use. The fact that these groups differed in how they classified objects could be seen as an effect of linguistic relativity; one could argue that the English speaking Navajo children preferred classifying according to color as a result of their speaking English. On the other hand, monolingual English children did *not* prefer to classify based on color! Both the monolinguals and the Navajo-dominant Navajo children preferred to classify the objects by shape. If we wanted to link

the preference of classifying based on shape to the Navajo speaker's obligatory marking of object shapes, why would an English speaker (who is not required to attend to object shapes in the same way) show the same preference towards shape classification? Once again, we find ourselves struggling to reconcile the original Whorfian claims with what we learn from empirical testing.

At this point in time, it seems highly improbable that we can generate genuine support for a causal claim like linguistic relativity. This kind of research is bound to always be correlational in nature, since we cannot simply assign people to be native speakers of a language. When we select speakers of different languages for study, we may conflate their linguistic differences with their experiential or cultural differences that could affect the cognitive measures we use. Correlational research ensures that even if a connection between language and thought is found, we cannot make any conclusions about the directional causality of that relationship. Moreover, linguistic relativity research is perpetually plagued with cross-sectional confounds that may refute any claims to be made in support of the hypothesis. Cross-sectional research across populations with different languages is required to make any definitive conclusions about linguistic relativity, though how do we know that differences we find are not simply the result of cultural differences themselves? A succession of studies published during the 1990s fell victim to this, making claims regarding the apparent superiority of Asian children in understanding mathematical place value. These studies reported that Japanese children were more accurate at representing numbers using standard base-10 blocks compared to American children, and that Korean, Japanese, and Chinese children were found to prefer using combinations of 10s and 1s to represent two-digit numbers, whereas American children preferred to use a collection of single units (Miura & Okamoto 1989, Miura et al. 1988). These results were widely taken to exemplify

the natural superiority of Asian languages in representing mathematical values, since number-naming systems in these languages follow a pattern of naming both the 10s place and the 1s place (13 would be “ten three,” not “thirteen” as in English) (Miura et al. 1994). Though these results and subsequent explanation are intriguingly compatible with linguistic relativity, they may simply be a blatant overstatement of cultural differences between Asian and American populations. Towse and Saxton later corrected this claim, pointing out that Asian children’s accuracy in representing numbers may be rooted in increased quality of education for these children when compared to the Americans. Moreover, they point out that the Asian children in the Miura et al. studies may have been inadvertently prompted by the researchers to use combinations of 10s blocks and 1s blocks, diminishing any effects reported by the authors (Towse & Saxton 1997). Thus, research pursuing linguistic relativity is often subject to conflating cultural effects on cognition with linguistic effects on culture, further mystifying an already obscure connection between language and culture.

Additionally, it is quite challenging to design a study that is entirely culturally accurate, as Western authors often overestimate their understandings of other cultures. As evidenced by the previously discussed Boroditsky and Chen studies, researchers can often fall victim to their own assumptions about cultures with which they are not familiar. Even researchers aiming to shed light on cross-cultural differences can begin to confuse cultural contrasts as being something intrinsic to language rather than a result of culture itself. It seems that much of the research surrounding this idea has been poorly executed for the same reasons that the idea itself is theoretically questionable: it tends to overstate cultural differences as representing something deeper about languages. As of right now it is simply too difficult to disentangle culture from

language in how we understand others, so we cannot make any conclusions that are both aligned with Whorf's claims and empirically supported.

Popularity of Linguistic Relativity

As evidenced by my earlier discussion, the connection between language and cognition is intricately nuanced and empirical endeavors in this area of study are often riddled with inconsistencies. Even studies aimed at linguistic determinism, which is supported by psycholinguistic evidence, are fiercely debated across different disciplines. Linguistic relativity has never seen robust empirical evidence, yet it has nonetheless persisted as a theory since its popularization through the 1940s and 1950s. Despite being largely unjustified, many scholars and students alike find themselves fascinated by the idea that the language that one speaks meaningfully contributes to their personal worldview. Moreover, linguistic relativity's claim that different languages generate contrasting worldviews seems to provide a pragmatic explanation for people having dramatically different perspectives across diverse cultures. Of course, many would argue that contrasting worldviews between people of divergent backgrounds should simply be attributed to cross-cultural differences, as culture contributes to our perceptions of the world. Despite this obvious answer, many still feel as though their thought processes are intrinsically connected to the language that they speak.

Anecdotal Evidence

Some even understand their own experiences with bilingualism as being heavily affected by linguistic relativity, believing that activating one language over another enables distinct thought patterns, emotional tendencies, and even personality traits. A personal interview with a classmate whose native language is Russian reveals a perspective that undeniably aligns with linguistic relativity. She expressed that speaking either Russian or English apparently activates

different “parts” of her brain, as she engages with distinct cultural communities using each language. “I feel like our brains create different versions of ourselves depending on where we are and who we’re talking to—language feels very central to how I understand myself and others and I definitely feel a shift depending on what language I’m speaking.” She stated that language is obviously closely intertwined with culture, emphasizing that it is quite difficult to interpret her experience with one without the other. “My Russian friends from home just understand certain things and have certain similarities to me that no one else can really understand. There’s just so many jokes and ideas that are so specific to that culture, and that community, and that language that it’s like a whole different subsection of thought that’s separate from English thought for me.” Linguistic relativity resonates with individuals who have intimate connections to multiple cultures by highlighting differences across linguistic communities. This kind of sentiment seems common across bilingual speakers, as many agree that speaking a second language makes them *feel* different internally. Though the Whorfian claims are unscientific, his ideas spoke to the close connection between language and culture making them wildly popular on a personal level.

Depictions in Media

Many individuals have been exposed to linguistic relativity and its related claims through pop culture in various forms of media. Perhaps the most well-known example of linguistic relativistic notions in media is in Orwell’s 1949 dystopian novel *Nineteen Eighty-Four*, which features a totalitarian government that regulates all aspects of individuals’ lives (Orwell 1949). In the novel, the reigning political power enforces a controlled language called Newspeak to further control its citizens, as Newspeak excludes any concepts of individualism and free will from its vocabulary. Casasanto notes that radical sentiments are thus rendered literally unthinkable in Newspeak, heavily restricting its speakers from engaging in critical thought against the

hegemonic regime (Casasanto 2008). One can easily draw comparisons between Orwell's Newspeak and the tenets of linguistic relativity since the restriction of free speech under the regime intends to limit both the cognitive and political abilities of its people. Furthermore, themes of linguistic relativity can also be observed in the 2016 science fiction film *Arrival*, which depicts a linguist who attempts to learn the language of a foreign alien race that has suddenly landed on Earth (Villeneuve 2016). In this story, these aliens possess a non-linear understanding of time that is essential to their language and communicative abilities. As the linguist learns more about this alien language and its sense of temporality, she gains the ability to see future events, seemingly activating a new cognitive capacity through her communications with them. *Arrival* prominently features questions of linguistic relativity, by proposing the idea that learning a foreign language enables one to access new forms of thoughts that were unimaginable prior. This film's focus on the domain of time and its conceptualization through language is especially reminiscent of Whorf's original claims about the Hopi language, as he posited that a distinct understanding of time is distinctly encoded in each language (Sutton 2018). *Arrival* and *Nineteen Eighty-four* were both well-received, spurring many to consider the possible deterministic impact of language on thought. These pieces of media represent how depictions of Whorfian ideas have crept into popular culture, capturing the interests of academics and general audiences.

Relativism in the Social Sciences

Linguistic relativity intrigues individuals, mass media, and academia alike, as some disciplines have adopted this doctrine of language as being not only accurate, but necessary for modern cross-cultural study. Linguistic relativity is largely related to the tenet of cultural relativism proposed by Franz Boas, which generally asserts that an individual's beliefs,

perceptions, and practices are best understood within the context of their own culture. Boas influenced both Whorf and the larger American school of anthropology, as his ideas became basic principles for the study of foreign cultures in the early 20th century. Following a history of brazen racism and prejudice against those who were othered by Western society, the Boasian approach was a notable progression in the pursuit of objective social scientific study. Linguistic relativity can then be seen as a theoretical byproduct of cultural relativism, as both ideas assume that some feature of humanity is relativized to their specific experience or identity (Feinberg 2007). Linguistic relativity, as well as a generalized relativism towards knowledge and experience, has taken hold across anthropology and the social sciences. This stance has been dubbed a “post-modernist relativism” (Boghossian 2007) and aims at correcting the historical prejudices of various academic fields. Within disciplines that have been historically dominated by the perspectives of white Western males, this post-modernist relativism seemingly enables researchers to highlight the unique nuances of other cultures. Linguistic relativity thus provides culturally conscious anthropologists with a doctrine that emphasizes the differences between populations, attributing distinctive features of a culture to the language itself. Moreover, the rise of identity politics further emphasizes this need to attend to individual cultural connections.

One might point out the irony of returning to notions of linguistic relativity to foster multiculturalism, since the anthropological background that Whorf grew out of was partly motivated by bigotry. Despite Boas’ approach establishing a precedent of impartial cultural study, anthropology nonetheless struggled with achieving impartiality in understanding the practices of foreign peoples. Though Whorf’s theory seems to highlight the power in recognizing distinctions between languages and cultures, his generation was largely concerned with emphasizing the differences between “us” and “them.” Anthropology through the mid-20th

century still tended to exoticize foreign populations and Whorf was obviously influenced by this in his focus on the supposed cognitive contrasts between cultures. Nonetheless the fields of anthropology and linguistics have moved away from this period of discrimination, aiming to truly understand other cultures' worldviews rather than exaggerate differences to justify racist Western biases. Linguistic relativity seemingly allows for one to better conceptualize how another culture forms a distinct perspective by attending to the specifics of their language. Accepting conflicting scientific, moral, and cultural views from different societies is made easier by claiming that foreign ideas derive from the habitual use of foreign languages themselves; one could not understand the nuances of an unfamiliar worldview without first understanding the nuances of their language. In this application, we can again see how a relativizing to one's language may simply be overstating the impact of linguistic patterns, since these proposed cognitive effects could easily appear as a result of one's acquaintance with a given culture. Nonetheless, many anthropologists have begun to rely on linguistic relativity as a dogmatic crutch in an increasingly globalized world. As multiculturalism becomes more important in not just academics, but throughout Western culture as a whole, linguistic relativity allows its proponents to advocate for a postcolonial cultural pluralism that recognizes the importance of diverse perspectives.

Significance of Whorf's Enduring Popularity

As we have seen, Whorfian ideas on language crumble under the weight of scientific scrutiny, though linguistic relativity has nevertheless persisted as a theory of language and mind, appearing in classrooms, textbooks, and mass media alike. In the previous section, I explicated the return to Whorfian relativism in the social sciences and its connection to promoting multiculturalism. A view like linguistic relativity that attunes to differences between people

seems to fit in with individual perceptions of bilingualism, as well as help contextualize great contrasts between global perspectives. We can see how this view has reappeared in the literature after the era of linguistic universalism during the 1960s, when linguistic relativity was almost entirely dismissed by professional linguists. Universalism commanded the study of language for decades, with linguists like Noam Chomsky insisting a biological predisposition towards language. Given this supposed natural tendency towards language, many contended that there must be underlying structural *similarities* across all languages, *not differences*. Additionally, the technological advancements of this era spurred a dominant commitment to cognitivism in both psychology and linguistics, leaving little room for a view like Whorf's that spoke to the inexplicable subtleties of the human experience. Linguistic relativity was considered almost entirely fruitless during this period, with critics like Steven Pinker asserting "discussions that assume that language determines thought carry on only by a collective suspension of disbelief" (Pinker 1994). Despite this period of theoretical disgrace, linguistic relativity has nevertheless returned as a purportedly valid assumption in the study of language. We can understand this tendency through a Kuhnian lens of conceptual recursiveness, as ideas in the social sciences often exist on a swinging pendulum between acceptance and rejection. Thomas Kuhn viewed the social sciences as being distinct from modern natural sciences, which he believed moved through a definitive progression of paradigms. Where the natural sciences experience large-scale revolutions that shift the standards of research, like Copernicus' proposal of heliocentrism, the social sciences move between a variety of frameworks at any given time. He likens the dynamic trends of social sciences to that of "proto-sciences," claiming that fields like anthropology have little ability to make definitive advances towards ultimate knowledge (Kuhn 1970). The correlational nature of social scientific inquiry assures that no paradigm can ever be fully

dismissed and linguistic relativity is no different. Whorf's focus on differences simply did not correspond with the larger trend of pursuing cognitive universals during the era of Chomskyan linguistics, though linguistic relativity was never completely abandoned by scholars. The idea was merely incongruent with the reigning framework of the time, though it may still be utilized again. We may return to linguistic relativity as we see fit, though we would never revert to a geocentric model of the solar system after the Copernican Revolution. The social sciences do not ever truly retire a given theory, as even outdated ideas may be revived and refreshed with changes in the academic landscape. We may even see scorned theories of the social sciences be enlisted to aid in recent advances of natural sciences, with linguistic relativity even being employed to help conceptualize quantum mechanics (Grelland 2006). Thus, Whorf's hypothesis returns to relevance in line with the aforementioned trends towards highlighting multiculturalism, as we adjust the idea to fit our contingent needs.

The question still remains as to why we seem to resonate with this concept, especially if the empirical evidence is generally lacking. On the individual level, I would attribute this popularity to the fact that Whorf's ideas highlight the subtleties of culture that have oftentimes been overlooked. Mentions of linguistic relativity in college classrooms spur lively discussions because it enables students to connect with their firsthand cultural experiences in a way that feels academically meaningful. It should be no surprise that people enjoy connecting their education to their own experiences, and a view like Whorf's places a specific importance on the impact that one's language and culture has on their thought processes. Those who first become familiarized with linguistic relativity in this context find themselves resonating with this idea, perhaps forming a deep-rooted bias towards this set of claims. This may explain the widespread

persistence of Whorf supporters, as those who believe in linguistic relativity do so even in the absence of hard evidence.

On the disciplinary level, we may ask why we find it useful to lean on a view like Whorf's in recognizing differences across cultures. Why must we attribute different worldviews to something inherent to language itself? It seems as if we find it easier to think that those with wildly different views are literally not "speaking the same language" as us. We can connect this idea back to the earlier topic of conceptual metaphor, as we frequently use metaphors regarding language itself to represent sharing a similar mindset. We might say that someone is "speaking our language" if what they say resonates with us deeply, or we may impolitely ask that someone repeat themselves "in English, please" if what they said was indecipherable to us. This bias towards language itself equating with thought is heavily entrenched in Western society, and therefore appears within our own language patterns. This still begs the question of why we must attribute such disparities to language itself, abstracting away from the simpler answer of mere cultural differences. Perhaps we find it unnerving to accept that all people are genuinely capable of thinking the same thoughts, resisting the idea that whatever culture we happen to be brought up in biases us one way or another? In regard to foreign cultural practices that we find morally reprehensible, for example, we may find it easier to attribute this variation in moral opinions to something indescribable within the language of another culture. If we accept that language differences do not lead to these proposed cognitive differences and the global variety of worldviews sources from culture itself, we would need to accept that we are not much different from cultures we see ourselves as ideologically opposed to. Granted my thoughts here lean more towards political science and macrosociology, which is beyond this scope of my present paper.

Still, I think that this resistance to accepting similarities across peoples is what keeps us committed to the Whorfian thesis and other attempts at relativism.

Conclusions

Linguistic relativity, though unscientific and unwarranted, has intrigued the imaginations of academics and laypeople alike since its popularization by Whorf. Compared to linguistic determinism, this collection of claims regarding language and thought is virtually unprovable in experimental contexts. Nonetheless, an extensive line of studies has concentrated on identifying different cognitive domains that may be differentially influenced by dissimilar languages. Linguistic relativity has persisted as a topic of discussion in research fields and popular culture, as it has appeared in many instances of modern media. Given the rising emphasis on recognizing and valuing others' cultures across disciplines, this theory of language and thought has seen a persistent faction of supporters as of recent. Linguistic relativity resonates with individual's unique experiences with linguistics and culture, and this widespread interest at the personal level seems unaffected by the many studies that reject it in its most basic form. The return of Whorfian ideas undoubtedly represents a circular tendency of theories in the social sciences, as any given paradigm's usefulness may ebb and flow with broader intellectual trends. The movement towards post-modernist relativism and multiculturalism assures that the cult of linguistic relativity will persevere into the future, as Whorf's interest in highlighting differences is conceptually compatible with our current methods of understanding the world.

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