# LINGUISTIC RELATIVITY AND EMOTION

by

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Linguistic relativity, more colloquially known as the Sapir-Whorf hypothesis, is the idea that the native language one speaks shapes the way one perceives and experiences the world. This is not to say that language determines worldview and cognition, only that language may influence worldview and cognition. Linguistic relativity has been studied using a variety of methods. Areas of interest have historically included color, space, time, and motion. An emerging domain in linguistic relativity concerns emotion, specifically how emotion language influences the acquisition of emotion concepts, emotion perception, and emotion experience (Pons, Lawson, Harris, & de Rosnay, 2003; Widen & Russell, 2003). What role, if any, does language play in constructing our emotional lives? Subsequently, do speakers of languages with different emotion lexicons have different emotional experiences.

This paper aims to explore these central questions through a literature review of peer-reviewed articles on the subject. The structure of this paper is as follows. First, an overview of the history of emotion is provided, starting from the early 17th century when the term was first introduced into the English language and leading into the modern theory of the basic emotion approach. Evidence that both supports and

challenges the basic emotion approach is considered. The discussion then moves into the history of linguistic relativity and in broad strokes reconstructs its rise, fall, and resurrection in the scientific community. Modern hypotheses of linguistic relativity are then tied to the constructionist approach to emotion, which concludes the introduction. The main body of the literature review is broken up into four parts: (1) emotion and language covary, (2) impairing access to emotion words reduces emotion perception, (3) increasing access to emotion words enhances emotion perception, and (4) semantic dementia reduces emotion perception. A discussion then ensues, considering the limitations and potential benefits of the research.

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**Introduction**: *A Short History Emotion*

Derived from the French term *émotion*, *emotion* was adopted by the English language in the 17th century and used to describe a physical disturbance (Dixon, 2012). In academic circles, *emotion* was used as a catch-all term, encompassing passions, affections, and sentiments (Dixon, 2012). In the early 19th century, however, a professor by the name of Thomas Brown published a series of lectures in which he defined emotion as the name "used to comprehend all that is understood by feelings, states of feeling, pleasures, pains, passions, sentiments, affections" (Bain, 1859, p. 3). Brown's work was further developed by William James in the late 19th century when he published an article titled, "What is an Emotion?" and described emotion as a "category of mental states" (Dixon, 2012). Since then, emotion has exploded into its own field of study. For centuries researchers have theorized, tested, and debated the evolution, function, processes, and types of emotion. Hundreds of thousands of articles have been published on the topic. Despite the wealth of knowledge on the subject, however, there is no consensus on a single definition of emotion. Without a universal definition, researchers may categorize emotions based on "behaviors, physiological responses, feelings, thoughts, or any combination thereof" (Izard, 2009). This is a methodological limitation that will be further discussed later. Those who study emotion tend to fall into various camps of thought, each with its own theoretical perspective.

The idea that emotion perception is automatic and informed by cues from facial expressions is known as the basic emotion approach in psychological literature

(Lindquist & Gendron, 2013). The basic emotion approach suggests that human beings are born in possession of six emotions: happiness, sadness, fear, anger, disgust, and surprise (Barrett, Lindquist, & Gendron, 2007; Prinz, 2004). Supporters of this theory argue that emotions are universal and biologically innate, meaning that, barring organic mental disorders, people everywhere will understand and experience these emotions. All other emotions, such as guilt, jealousy, *schadenfreude*, *amae*, etc., are classified as *nonbasic* emotions and are generally believed to be combinations or "blends" of the basic emotions (Mesquita & Markus, 2004). This approach is sometimes referred to as the color palette theory of emotion since the blending of primary emotions into secondary emotions is similar to the "infinite number of secondary colors" that can be produced from "permutations from the primary set" (Smith & Schneider, 2009). For example, jealousy, a nonbasic emotion in English, would be considered to be the combination of "anger, fear, and sadness" (Mesquita & Markus, 2004). Loathing, another nonbasic emotion in English, would be considered to be the combination of anger and disgust. From this perspective, the emotion lexicon is organized "in a semantic field that is based on the six emotional modes" (Elasri & Boubekri, 2020). In this way, while there is a difference between basic and nonbasic emotions, the difference is not structural. All emotions across human cultures are fundamentally alike and nothing more than automatic, biological reflexes triggered by events and objects in the world (Barrett, 2011).

The basic emotion approach was largely inspired by Charles Darwin and his book, *The Expression of the Emotions in Man and Animals*, which posits that

"emotions are mental states that cause stereotypic body expressions" (Gendron & Barrett, 2009). During his travels, Darwin noticed that humans, and some animals, display remarkably similar emotion facial expressions. He hypothesized that emotions are evolved mechanisms with important survival functions, like helping animals avoid danger and cooperate in groups. As such, the same emotions should be present in all humans and other closely related mammals. Darwin's work was followed by research on the similarity of human facial expressions across cultures (Mesquita & Frijda, 1992).

Paul Ekman, famous for his contributions to the basic emotion approach, was initially skeptical of Darwin's findings. Ekman thought that emotion expressions were socially learned and therefore differed cross-culturally. To test the hypothesis of the basic emotion approach and universal facial expressions, Ekman traveled to Papua New Guinea, where he studied the Fore, an isolated tribe with limited Western influence. Ekman found that the Fore "tended to associate facial expressions of the Big Six emotions with the same kinds of situations with which we associate them in the West" (Prinz, 2004). This was perceived as strong evidence supporting the basic emotion approach. Indeed, the basic emotion approach has dominated the field of emotion research in psychology for decades. If one were to crack open an introductory psychology textbook, chances are one would find a section on the basic emotions within the first few chapters.

Since Ekman's first studies in the late 60s, technology has dramatically improved. With the help of functional magnetic resonance imaging (fMRI), researchers can now study the brain's response to stimuli in real-time (by measuring changes in

oxygen levels as blood flows through different parts of the brain). Some advocates of the basic emotion approach argue that each emotion has its own "dedicated neural circuitry," a hypothesis known as the locationist approach (Lindquist & Barrett, 2012). This was observed in early neuroimaging studies, and some researchers concluded that fear, disgust, sadness, and anger were localized, respectively, in the amygdala, insula, subgenual anterior cingulate cortex, and orbitofrontal cortex (Lindquist & Barrett, 2012). Further support is derived from rare cases in which individuals have brain lesions, such as in the case of SM, who has focal bilateral amygdala lesions. SM shows dramatically reduced fear responses in real-world and laboratory settings but is still capable of feeling and exhibiting other basic emotions (Feinstein & et al., 2011).

While there is compelling evidence supporting the basic emotion approach, researchers over the years have critiqued and challenged the hypothesis. First, while studying the Fore (and other cross-cultural populations), Ekman did not use free-choice tasks. Instead, he provided his participants with photographs of stereotyped expressions or contextualized short stories and asked them to choose an emotion label from a provided list. Fixed-choice paradigms in this case are problematic because they force participants to choose labels they might not have used in a free-response format. Thus, under free-response conditions, participants in Ekman's studies may have labeled the emotions depicted in the photographs and stories as something different than the Big Six (Russel, 1994).

Furthermore, recent studies on the cross-cultural perception of emotions have yielded challenging results. The basic emotion approach assumes that emotions have corresponding facial expressions (e.g., scowling for anger or smiling for happiness) and

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that these expressions are universally recognized. Early studies supported this hypothesis, but very few of these studies compared individuals from Western cultural contexts to individuals from remote cultural contexts. Gendron & colleagues (2014) found that only six published experiments tested the universality of emotion perception by comparing Westerners to people from remote cultural contexts with little Western influence (Gendron & et al., 2014). Thus, the majority of the findings in the literature may be capturing a Western understanding of emotion expression and not a universal understanding. Indeed, when Gendron & colleagues compared the results of Western participants to remote Himba participants in a free sort task where they were asked to sort stereotyped facial expressions into piles by emotion type, the Himba participants "did not show the presumed universal pattern" (Gendron & et al., 2014).

As for neuroimaging studies, meta-analyses have failed to demonstrate "consistent and specific relationships" between dedicated brain regions and specific emotional faculties (Barrett, 2017). For example, the amygdala shows activity during perceptions and experiences of fear, disgust, anger, sadness, and happiness (Costafreda & et al., 2008). Other brain regions believed to play a role in emotion (the insula, subgenual anterior cingulate cortex, and orbitofrontal cortex) demonstrate the same non-specificity (Lindquist & et al., 2012). This has led some researchers to hypothesize that emotions are not localized and have proposed a much more complex and interactive model. Instead of single brain regions producing instances of discrete emotion, it has been proposed that multiple brain regions contribute to the experience and perception of multiple emotions in a process known as degeneracy. In the degeneracy model, emotions are created by "multiple spatiotemporal patterns in

varying populations of neurons," (Barrett, 2017). These findings help explain the activation of multiple brain regions across different instances of emotion and the lack of localization (Edelman & Gally, 2001).

Other critics of the basic emotion approach have claimed that it has fostered an interest in "universal emotion potential, rather than emotional practice" (Mesquita & Frijda, 1992). It is not at all outrageous to think that all humans, who share an evolutionary history, may be capable of recognizing instances of, what we call in English, happiness, sadness, fear, anger, disgust, and surprise. However, the frequency and mechanism by which humans in other cultures actually express, experience, and perceive the Big Six should be investigated.

Researchers are now interested in culturally unique emotions and the cognitive processes that may lead to them. There is a dazzling array of emotion words in other languages that do not have direct translations in English. Take, for example, the German word *schadenfreude*, which is the pleasure one derives from another's displeasure, or the Finnish word *sisu*, which describes the ability to sustain courage and determination in the face of extreme adversity (Russell, 1991). There is *amae* in Japanese, which describes the "ability to depend and presume upon another's love or bask in another's indulgence," and *ijirashii*, also in Japanese, which refers to the feeling "associated with seeing someone praiseworthy overcoming an obstacle" (Niiya, Ellsworth & Yamaguchi, 2006; Russell, 1991). In Malay, the word *amok* refers to a "violent frenzy," and in Bengali, the word *obhiman* is the "sorrow caused by the insensitivity of a loved one" (Prinz, 2004; Russell, 1991). There are even some English emotion words that cannot be directly translated into other languages. For example,

English takes care to distinguish between types of fear. There is terror, horror, dread, apprehension, and timidity. In contrast, in Gidijingali, one word covers these distinctions: *gurakadj* (Russell, 1991). Likewise, in English, sadness and anger are experienced as separate emotions, but in Turkish, anger and sadness are lexicalized with the same word: *kizginlik* (Barrett, 2009).

The different systems of emotion terms are of particular interest because they reflect the different ways language lexicalizes emotion, which may in turn impact the conceptualization of emotion (Wierzbicka, 1986). If emotion words vary by language, individuals who speak different languages may "encode, respond to, and remember emotions" in different ways (Russell, 1991). If true, this would suggest some emotions do vary cross-culturally and are not always biologically innate or automatic. Language may do more than simply communicate emotion (Lindquist, Satpute, & Gendron, 2015). Indeed, emerging research is advancing the idea that language contributes to emotional perception and emotional experience (Gendron & et al., 2012). This is best captured by the constructionist approach, which maintains that language plays a role in emotion because it helps "acquire, organize, and use the concept knowledge that is an essential element in emotion perceptions and… experiences" (Lindquist, Satpute, & Gendron, 2015 ). According to such a model, language plays an active role in constructing our emotional lives.

The idea that language impacts cognitive processes is not new. Linguistic relativity, more popularly known as the Sapir-Whorf hypothesis, is the theory that the native language one speaks influences the way one thinks about and perceives the world. The objective of this paper is to examine and summarize pre-existing literature

on this topic to answer these questions: *What role, if any, does language play in constructing our emotional lives? Subsequently, do speakers of languages with different emotion lexicons have different emotional experiences?*

### Background: A Short History of Linguistic Relativity

"No two languages are ever sufficiently similar to be considered as representing the same social reality. The worlds in which different societies live are distinct, not merely the same world with different labels attached"—Edward Sapir, from "The Status of Linguistics as a Science"

Generally referred to as the Sapir-Whorf hypothesis, linguistic relativity was popularized by Benjamin Lee Whorf, a student of Edward Sapir, in the early 20th century. Although Whorf's initial education prepared him for a career in chemical engineering, he was always deeply fascinated by linguistics and dedicated many years of his life to studying Uto-Aztecan languages. Whorf demonstrated such a remarkable aptitude for linguistics that he was awarded an Honorary Research Fellow in Anthropology at Yale, served on the committee of the Society of American Linguistics, and presented graduate-level lectures on American linguistics. Over the course of his career, Whorf published several notable articles on Uto-Aztecan linguistics and contributed greatly to the field of linguistics. Whorf is perhaps best remembered for his research on the Hopi language, which he undertook in the latter years of his rather short life. Whorf claimed that the Hopi language has "no words, grammatical forms, construction, or expressions that refer directly to what we call time" and therefore came

to the conclusion that the Hopi people have no "general notion or intuition of time as a smooth flowing continuum in which everything in the universe proceeds at an equal rate, out of a future, through the present, [and] into the past" (Whorf, 2012). This was an exciting notion because it suggested the way people perceive time might be influenced by the types of verbal tenses present in their language (Björk, 2008). It was possible that English speakers and Hopi speakers were experiencing subtly different worlds. Overall, Whorf supported the view that the "structure of language tends to condition the ways in which a speaker of that language thinks" (Björk, 2008).

However, linguistic relativity generally fell out of favor in the 1960s, and Whorf's conclusions about the Hopi language were ultimately proven wrong in the early 1980s when Ekhart Malotoki conducted his own research on the Hopi language and found that Hopi *does* include concepts about time. Hopi concepts simply make distinctions between future and non-future tenses, which differs from the past and non-past distinctions English makes (Pinxten, 1984). Linguistic relativity and Whorf received harsh criticism, even though the bulk of Whorf's work was well formulated. Today Whorf is considered to be a major inspiration to 21st-century linguistics.

*Universal Grammar*

Between the 1960s and 1980s, the same point in time in which linguistic relativity was dead in the water, a theory known as universal grammar was gaining recognition. Although universal grammar had been speculated upon since the mid-13th-century, it did not gain traction in the scientific community until the late 19th century, when Wilhelm Wundt argued that syntactic categories (i.e., lexical categories

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that make up traditional parts of speech, such as nouns, verbs, numbers, and tenses) are universally found in all languages (SIL, 2017). The original universal grammar theory was not developed in response to linguistic relativity. However, in the mid-20th-century, a scientist by the name of Noam Chomsky entered the scene and tweaked the theory of universal grammar, stating that languages not only share similar properties but are genetically based.

Chomsky's theory of universal grammar argues that "all human beings inherit a universal set of principles and parameters that control the shape human languages can take, and which are what make human languages similar to each other" (Mitchell & Myles, 2004, p.54). Universal grammar contains two important points. (1) All languages contain similar structures and rules, suggesting that language is innate and genetically determined. (2). All children, barring organic disturbances or extreme sensory deprivation, acquire language the same way (Fruchter, 2018). From the perspective of universal grammar, although there are different words to express oneself depending on the language one is speaking, these different words do not represent different ways of conceptualizing the world. What is seen as differences between languages and their structure are nothing more than surface phenomena and do not influence the brain's cognitive processes.

*The Resurgence of Linguistic Relativity*

In 1991, a symposium titled "Rethinking Linguistic Relativity" was held. Scholars from all over the world, ranging from linguists, anthropologists, cognitive

psychologists, developmental psychologists, and cognitive scientists, attended, and interest in linguistic relativity was rekindled (Gumperz & Levinson, 1991). Since then, research in the area of linguistic relativity has exploded. Traditionally, linguists studying linguistic relativity have performed experiments in several domains, including, but not limited to: color, space, time, motion, and grammatical gender. There are marked grammatical differences in the ways in which different languages attend to these aspects. Consider, for example, this simple sentence: a person ate a peanut.

> [I]n English, we must include tense – the fact that the event happened in the past. In Mandarin, indicating when the event occurred would be optional and couldn't be included in the verb. In Russian, the verb would need to include tense, whether the peanut-eater was male or female (though only in the past tense), and whether said peanut-eater ate all of the peanuts or just a portion of them. In Turkish, one would specify whether the event being reported was witnessed or hearsay. (Boroditsky et al. 2003: 61)

Boroditsky's quote succinctly illustrates the different information that different languages require their speakers to attend to. This literature review will now briefly discuss findings in linguistic relativity in three domains: color, spatial relationships, and grammatical gender.

*(A) Color*

Much work has been conducted on color. In 1969, researchers Brent Berlin and Paul Kay wanted to understand the process by which languages acquire basic color terms. A basic color term (BCT) is a color word that is "applicable to a wide class of objects (unlike blonde), is monolexemic (unlike light blue), and is reliably used by most

native speakers (unlike chartreuse)" (Hardin, 2013). During their research, Berlin and Kay discovered a pattern. As a language develops, it tends to create color categories in a certain order, starting with black and white, then red, then green or yellow, then green *and* yellow, followed by blue, and then adding additional terms, like brown, orange, purple, pink, and gray. This means that not all languages have the same number of basic color terms (languages typically have between two and eleven).

English has 11 basic color terms and distinguishes between the colors blue and green. Not all languages make this distinction. Himba, which is spoken by the Himba people in northern Namibia, has one word that encompasses both blue and green in their basic color term vocabulary: *Buru* (Roberson & et al., 2005). Languages that do not distinguish between blue and green are referred to as *grue* languages (Lindsey & Brown, 2004). Examples of other *grue* languages include Korean (Rhee & et al., 2019), Vietnamese (Alvarado & Jameson 2002), and traditional Japanese (Kuriki, 2017). In many of the world's languages, blue is simply a variant of green.

To understand how language influences color perception, researchers have developed simple tests. In one such test, Himba speakers were shown a color wheel that contained 11 identical green squares and 1 blue square. When asked which square was different, the Himba speakers took more time to distinguish between the blue and green squares (Evans, 2017). The time it took for participants to respond was the dependent variable. Response latency is a standard method in cognitive research to measure processing ease or efficiency (for a discussion, see Stroop, 1992). This is not to say that the Himba speakers could not accurately distinguish between blue and green, they

simply took longer than average to do it. Himba speakers (and all people who speak *grue* languages) can see the difference between blue and green. The interpretation of these results is that Himba speakers are simply less sensitive to the distinction because of the way their language divides the color spectrum.

While English distinguishes between green and blue, it does not make distinctions about different shades of blue. Russian, however, distinguishes between light blue (*goluboy*) and dark blue (*siniy*). Winawer and colleagues (2007) studied whether this linguistic difference impacts color discrimination. English-speaking and Russian-speaking participants were shown a series of three colored squares arranged in a triad (two squares on the bottom and one square centered above the two). All of the squares were varying shades of blue, spanning from Russian's *goluboy* to *siniy*. Participants were tasked with deciding as quickly as possible which of the two bottom squares matched the top square in terms of color. This test also used response latency as its dependent variable. Researchers found that Russian speakers were faster and more accurate at distinguishing between *guluboy* and *siniy*, which, for English speakers, are subtle and hard to detect differences in shade (Winawer & et al., 2007). Again, this is not to say that English speakers cannot distinguish between light blue and dark blue. It is likely that English speakers simply have a harder time distinguishing between light blue and dark blue because English does not consistently require this distinction to be made.

*(B) Spatial Relationships*

Different languages have different ways of communicating and conceptualizing spatial orientation. For example, English speakers indicate location based on their

position, using relative terms such as right, left, back, and front. In English, one might say that a coffee cup is *to the left of me* or that a laptop is *in front of me*. In contrast, Aboriginal people who speak Guugu Ymithirr indicate location in absolute terms by using cardinal directions (North, South, East, West, etc.). In Guugu Yimithirr, a coffee cup may be *to the West* or a laptop may be *to the North*. If you were to ask an individual who speaks Guugu Ymithirr 'Which way is South?' they would automatically point in the right direction. Many English speakers would be hard-pressed to complete this task with even a moderate degree of accuracy (Enfield, 2015).

*(C) Grammatical Gender*

Many languages have grammatical gender, but English is one of the languages that does not. In English, if I wanted to say: 'Look at the big chair,' I would not have to modify the adjective 'big' or the noun 'chair' to express gender. However, if I wanted to say that same sentence in French, I would have to preface 'chair' with *la* to indicate its feminine gender and use the form *grande* as opposed to *grand* to make the adjective 'big' agree with the feminine gender of the chair. Other languages that have grammatical gender include German, Spanish, Russian, Arabic, Hebrew, and Italian. Of course, not all of these languages agree on which words are masculine, feminine, or neuter. For example, bridge in German is feminine (*die Brücke*) while bridge in Spanish is masculine (*el puente*). Studies have suggested that native speakers unconsciously attribute nouns with the characteristics associated with male and female gender in humans and animals. (Phillips & Boroditsky 2003). In other words, an individual who speaks German may conceptualize bridges as being more feminine than Spanish speakers, perhaps describing them as beautiful or elegant as opposed to sturdy or bulky.

Studies like the aforementioned provide support for a *weak* version of the linguistic relativity hypothesis. The weak version of linguistic relativity purports that language only *influences* cognition. This differs importantly from the *strong* version of linguistic relativity, which states that language *determines* cognition. The strong version is problematic because it suggests that language limits cognition. However, it is fairly universally accepted that no strong version of linguistic relativity holds true. Instead, today researchers are looking for subtle relationships between languages and cognition. One area that has been of recent interest is emotion.

**Background: The Language as Context and Constructionist Approach**

*Language-as-Context*

The language-as-context hypothesis posits that emotion words (*happiness, sadness, anger, etc.*) serve as an "internal context" that "constrain the meaning" of a face during an instance of emotion perception (Barrett, Lindquist & Gendron, 2007). The basic emotion approach argues that individuals rely on facial expressions to make emotional perceptions. While it is true that structural information from the face is necessary for emotion perception, it is not sufficient to make an accurate judgment. Access to emotion words and their conceptual content serve to constrain or "reduce the uncertainty that is inherent in most natural facial behaviors" (Barrett, Lindquist & Gendron, 2007). In other words, the act of labeling or naming an emotion influences emotion perception. With access to emotion words, a face that displays a general affective state of displeasure may instead be perceived as *angry* or *sad*, depending on

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which emotion words are made available.

*Constructionist Approach*

  The constructionist approach identifies language as an important cognitive aspect of emotion perception and experience. Language "supports the conceptual knowledge used to make meaning sensations from the body and the world in a given context" (Lindquist, MacCormack & Shablack, 2015). According to this view, language does not simply supply a name after an emotion has already been felt. Instead, the labeling of an emotion (through language use) allows the perceiver to make more sense of generalized affective states (Fugate, MacDonald & O'Hare, 2020). This is a type of "top-down" processing. This is not to say that without language emotions cannot be perceived or experienced. In the absence of language, an organism "can still experience pleasure and displeasure" (Lindquist, 2017). However, the constructionist approach does argue that without language, organisms cannot transform "very vague sensations of pleasure and displeasure into a discrete and specific emotion" (Lindquist, 2017). By *vague*, Lindquist means to say that affective states are by nature ambiguous. Without emotion words, such as happy*,* joyful, content, elated, sad, devastated, angry, or enraged, these emotions would be experienced only as pleasant or unpleasant affective states.

**Methods**

  This paper reviews the existing literature exploring the effects of language on emotion conception, perception, and experience. A literature review was conducted by locating, reading, and analyzing studies that examined similar research topics. Due to the limitations imposed by COVID-19, a literature review was deemed to be an

appropriate and safe way to conduct research. Searches were conducted through Google Scholar, PubMed, and Connected Papers, all of which are considered to be credible sources of peer-reviewed information.

### *Literature Review*

*Emotion and Language Development Covary*

Some researchers hypothesize that children learn emotion categories with the aid of emotion words provided by caregivers. This process starts in early infancy and includes a combination of explicit labeling (e.g., "Look at that smile! You must be feeling happy right now!") and observation of adults using emotion words ("I was so mad, I could have screamed!"). More specifically, Hoemann, Xu & Barrett hypothesize that parents and caregivers help build and cultivate an infant's emotional life by "labeling events with emotion words" (Hoemann, Xu & Barrett, 2019). These emotion words "direct the cultural inheritance of emotion categories and the corresponding culture-dependent concepts" (Hoemann, Xu, & Barrett, 2019).

Supporting evidence for this theory comes from Lindquist, MacCormack & Shablack, who note that children cannot "reliably categorize facial expressions of different emotions (e.g., 'anger,' 'disgust,' 'fear,' 'sadness') as distinct" until they are exposed to, acquire, and begin to utilize emotion words. In order to demonstrate this phenomenon, researchers conducted an experiment in which 2-year-old participants were given five photographs of human faces (each depicting an emotion category, such as a happy face, scared face, sad face, angry face, surprised face, or disgusted face). The participants were also given an additional photograph (e.g., an angry face). The

participants were asked to compare the five photographs they had been originally given with the angry face. If the participants thought that the photograph matched the angry face, they were told to place it into a box. The participants placed all of the unpleasant faces (fearful, disgusted, sad, angry) into the box but left out all of the happy faces. Thus, while the 2-year-old participants in the experiment could detect broad affective states (unpleasant vs pleasant), they could not differentiate more specific or nuanced emotions. By age 4, however, children participating in the same experiment (and who had more advanced language capabilities) were more selective about which faces they put in the angry box, oftentimes leaving out sad and fearful faces.

These findings and others are further supported by the fact that children's understanding of emotion develops in tandem with language acquisition (Lindquist, MacCormack & Shablack, 2015). Although compelling, it is important to note that, in addition to advanced language capabilities, 4-year-olds are also more competent at more complex tasks in general. Since there was not a control group of 2-year-olds tasked with differentiating between non-emotional stimuli, it would be imprudent to say that language acquisition alone was responsible for the 4-year-olds' improved task capabilities. The relationship could be correlational, not causal. Furthermore, researchers in this experiment used stereotyped expressions, which failed to test the children's ability to apply emotion concepts during more variable instances of emotional expression.

*Impairing Access to Emotion Words Reduces Emotion Perception*

Other evidence that language influences emotion perception originates from

studies that experimentally manipulate participants' access to linguistic emotion

concepts (i.e, words) and researchers observe a corresponding impact in emotion

perception. A common method to test this is by impairing the participants' ability to

access emotion word knowledge. For example, Gendron & et al. conducted a series of

experiments that tested the extent to which participants relied on emotion word

knowledge to make sense of emotional faces. In Study 1, 60 participants were told to

repeat an emotion word (e.g., *anger*) either 30 times or three times. Repeating the

emotion word 30 times causes semantic satiation, a psychological phenomenon

wherein repetition causes a word to temporarily lose its meaning. In other words, the

emotion word becomes less accessible. Repeating the word only three times was the

control; the emotion word did not lose its meaning and was still accessible (Gendron &

et al., 2012).

After satiation, participants were shown a picture of a face with either a weak or

intense depiction of anger. Next, participants were shown a static image. This static

image was followed by two side-by-side pictures: the face depicting the weak version

of anger and the face depicting the intense version of anger. Participants were asked to

indicate which picture they had seen before the static image. The time it took for

participants to respond was the dependent variable. Response latency is a standard

method in cognitive research to measure processing ease or efficiency (for a discussion,

see Stroop, 1992) (Lindquist, 2006). Participants who underwent semantic satiation

were significantly slower to judge which face had been initially encoded, suggesting

that the "perceptual priming of emotional faces was disrupted when the accessibility of

a relevant emotion word was temporarily reduced" (Gendron & et al., 2012). This study

demonstrated that when "conceptual knowledge of emotion categories is disrupted, emotion judgments are poorer," illustrating the important role language plays in emotion recognition processes (Barker & et al., 2020).

In a similar study, Lindquist & et al. hypothesized that if emotional perception is aided by language, then individuals will have a more difficult time identifying emotion in others when emotion words have been made temporarily inaccessible through satiation. In Study 1, participants were randomly assigned to either the experimental or control group. Participants in the experimental group repeated the emotion word (*anger*) 30 times to satiate it. Meanwhile, participants in the control group only repeated the emotion word (*anger*) 3 times. Next, participants in both the experimental and control group were shown a picture of a face. Participants were asked to judge whether the emotion depicted in the face matched the word they had repeated. As hypothesized, researchers found that participants in the experimental group took longer to render a judgment, suggesting that emotion categorization was made more difficult after satiation of an emotion word occurred.

While Study 1 initially provides support for language influencing emotion perception, it is also possible that emotion word satiation simply prevented participants from being able to label the emotion they saw. In other words, it is possible that participants could still perceive emotion after satiation but their ability to verbally label instances of emotion was affected. Study 2 was designed to address this issue (Lindquist & et al., 2006). The perceptual judgment task in Study 2 did not directly depend on the use of emotion words. Just like in Study 1, participants in Study 2 were assigned to either the experimental group (where words were repeated 30 times, or

satiated) or the control group (where words were only repeated 3 times). Following

repetition, participants were shown two pictures of faces depicting emotion. Participants

were asked to judge whether the two faces matched each other or not. Unlike in Study

1, participants in Study 2 were not required to verbally label the emotion. They simply

had to decide whether the faces in the two pictures were expressing the same emotion.

It took participants in the experimental group longer than participants in the control

group to come to a decision. Researchers interpreted these results as the satiation of

emotion words interfered with the judgment of emotion (Lindquist & et al., 2006).

In studies 1 and 2, there were no limits placed on response time. Participants

were allowed to take as long as they wanted to make a judgment. In Study 3 researchers

decided to restrict response time, meaning participants had to favor speed over accuracy

when rendering judgments. These quicker responses made the accuracy of judgments

the dependent variable. Overall, participants in the experimental condition (those who

repeated the emotion word 30 times, or satiated the emotion word) were less accurate

when perceiving emotions in others (Lindquist & et al., 2006).

*Increasing Access to Emotion Words Enhances Emotion Perception*

If impairing access to emotion words decreases emotion perception, then it

follows that increasing access to emotion words would enhance emotion perception.

One study took a rather unique approach to investigate this hypothesis. In their study,

Fugate, Gouzoules, and Barrett had participants view pictures of chimpanzee faces.

The chimpanzee faces in these pictures displayed either bared teeth or screaming. The

participants were divided into two groups. Group 1 simply familiarized themselves

with the pictures, while group 2 was taught how to associate nonsense words with the chimpanzee faces. Members of group 2 were essentially provided with a novel label. Participants from both groups were then presented with a series of images that formed a morphed array of the chimpanzee faces, ranging from the bared teeth face to the screaming face. Shown two faces at a time, participants were asked to state whether the images were similar or dissimilar to one another.

Participants who were not provided with an emotion label (i.e., the nonsense word) had trouble distinguishing between faces. Participants who *were* provided with the emotion label, however, demonstrated categorical perception. In other words, they were "able to perceive a categorical boundary at the midpoint in the morphed array of bared teeth and scream faces" (Fugate, Gouzoules & Barrett, 2010). These findings are related to those mentioned at the beginning of this paper. Recall the studies that researched the impact of color categories on color distinction. Since Russian speakers have two words that categorically separate light blue from dark blue (*goluboy* from *siniy*), they are able to easily distinguish between subtle shades of blue, much like how the participants in this study were able to distinguish between different chimpanzee faces depicting emotion.

Barker & et al. also explored the effects of emotion labels on the perception of facial expressions. In Study 1, participants were presented with emotion labels that differed in their level of arousal. For example, the possible happy emotion labels included *contended*, *pleased*, and *elated*. In pilot studies, participants generally agreed that contented had a low arousal rating while elated had a high arousal rating (pleased was deemed to have a mild arousal rating). After participants in Study 1 were

presented with one of the emotion labels, they were shown a picture of a person displaying a general positive emotion. Participants were then asked to rate the arousal level of the person in the picture. Each participant was shown the same picture. However, each participant was presented with a different emotion label. Researchers found that participants who had been exposed to the low arousal label tended to rate the face as being low in arousal. In contrast, participants who had been exposed to the high arousal label tended to rate the face as being high in arousal. In other words, the emotion labels influenced the perception of facial expressions. This study provides evidence for the constructionist approach, which argues that the perception of emotion is not automatic or entirely informed by innate facial muscle movements. Facial expressions are too "ambiguous, varied, and not prototypically representative of their underlying emotions" to be understood without the help of emotion words. In this way, individuals, at least in part, perceive emotion using "top-down" processing (Barker & et al., 2020; Barrett, Mesquita & Gendron, 2011).

Further evidence that emotion perception largely occurs in a "top-down" fashion through labeling comes from Doyle, Gendron & Lindquist. Researchers in this study randomly assigned participants to one of three priming groups: word-prime, scene-prime, and control-prime. In the word-prime group, participants were given emotion labels, such as *sadness* or *disgust*. In the scene-prime group, participants were shown an emotionally evocative scene. In the control-prime group, participants were shown a blank stimulus (a white screen). After all of the participants had been exposed to the context prime, they saw an image of a face depicting either sadness or disgust. Following this single image, researchers then presented participants with two images:

one depicting a face of sadness and one depicting a face of disgust. It was the participants' task to pick out which of the two faces matched the first expression they saw. By averaging the accuracy scores and the response latencies, researchers were able to test whether language may be a better prime for perceptual matching of emotion in faces. Although differences in response time were not statistically significant, participants who were primed with emotion words were more accurate in the perceptual match task (Doyle, Gendron & Lindquist, 2021).

In a similar study, Nook, Lindquist & Zaki tested whether access to emotion concepts affected the accuracy and speed of emotion perception. In Study 1, participants were shown the *cue* stimulus, which was a picture of a face portraying one of four emotions: anger, disgust, sadness, and fear. Following this picture, participants were then shown either a second picture of a face (face-to-face trial) or an emotion category word (face-to-word trial). These were deemed to be the *target* stimuli. It was the participants' task to determine whether the cue stimulus matched the target stimulus. Researchers found that participants responded faster in face-to-word trials than in face-to-face trials. What is more, participants were perceptually less sensitive in the face-to-face trials than in the face-to-word trials (Nook, Lindquist & Zaki, 2015).

Additionally, individuals with alexithymia were included in Study 1. Alexithymia is broadly characterized by difficulties in "identifying, differentiating and describing [subjective] feelings" (Grynberg & et al., 2012). Individuals with alexithymia may have difficulty distinguishing between "feelings and bodily sensations of emotional arousal, constricted imaginal capacities… and an externally oriented cognitive style" (Taylor, 2000). These difficulties may reflect deficits in the "cognitive

processing and regulation of emotions" (Taylor, 2000). As such researchers hypothesized that individuals high in alexithymia would perform worse in face-to-face trials than in face-to-word trials. The face-to-word trials provided individuals with alexithymia with conceptual information not provided in the face-to-face trials. Indeed, participants with alexithymia were more perceptually sensitive to emotion in the face-to-word trials than in the face-to-face trials, suggesting that individuals with alexithymia may lack the ability to spontaneously apply conceptual knowledge to make sense of emotional states (Nook, Lindquist & Zaki, 2015). This would suggest that individuals with alexithymia have the ability to perceive, differentiate, and understand emotions under the right conditions (i.e. when they are provided with emotion words).

*Semantic Dementia Reduces Emotion Perception*

Further evidence that language plays a role in emotion perception comes from experiments that study individuals with semantic dementia. Semantic dementia is a variant of frontotemporal dementia and a form of primary progressive aphasia (Hodges & Patterson, 2007; Lindquist & et al., 2014). Individuals with semantic dementia experience bilateral atrophy in their anterior temporal lobes and lose "access to and use of concept knowledge" because the anterior temporal lobes are hypothesized to play a large role in semantic cognition (Lindquist & et al.; Visser, Jefferies & Lambon Ralph, 2010). As previously discussed, concept knowledge about emotion, which is represented in language, contributes to the ability to make discrete emotion perceptions. In other words, instead of categorizing a face as generally unpleasant, language allows individuals to perceive a face as *angry* or *sad* or *fearful*. Lindquist & et

al. studied three individuals who had semantic dementia, hypothesizing that these individuals would have impraired discrete emotion perception.

Researchers provided each of the three participants with 120 photographs of faces. There were 20 pouting faces, 20 scowling faces, 20 sneering faces, 20 startled-looking faces, 20 smiling faces, and 20 neutral faces. These faces were stereotyped expressions of sadness, anger, disgust, surprise, happiness, and neutrality, respectively. Participants were asked to free-sort the images into emotion category piles. Instead of sorting the images into six categories, participants sorted the images into three categories: pleasant, unpleasant, and neutral (they sorted the images by valence, but not by discrete emotion). Control participants, in contrast, who did not have semantic dementia, sorted the 120 images into six different categories (corresponding with the six different stereotyped emotions expressed in the faces). Thus, Lindquist & et al. argue that individuals with semantic dementia, and other individuals who do not have access to concept knowledge about emotions, such as young children, can perceive affect but cannot perceive discrete instances of emotion (Lindquist & et al., 2014; Barrett, Mesquita & Gendron, 2011).

While intriguing, it is important to note the limitations of this research. First, outside of the controls, there were only three participants involved, which means this study has low power and a large margin of error, so the results of this study may be meaningless. It is difficult to draw strong conclusions from such a small sample size. Second, the participants may have sorted the faces into three categories because it was a free-sort task and the participants merely found three categories to be the most

meaningful way to sort the images. It is possible they *were* able to perceive discrete

emotions but found sorting the images into three categories instead of six to be easier.

Thus, more research with larger sample sizes in this area needs to be undertaken before

any strong conclusions can be made about individuals with semantic dementia and

their ability to perceive discrete emotions.

### Discussion

Thus far, this literature review has examined the evidence that supports the

hypothesis that language (emotion words) influences the acquisition of emotion concepts

and plays an active role in emotion perception and experience. The question remains if

language plays a role in emotion, and languages have different emotion lexicons, then to

speakers of languages with different emotion lexicons have different emotional

experiences? As previously discussed, there are many emotion words that are unique to

a particular culture and language, such as *schadenfreude* in German and *amae* in

Japanese, but non-German and non-Japanese speakers can still experience these

emotions. English speakers can experience joy at others' misfortunes, as in the case of

*schadenfreude*, and the comfort of being able to support or rely on loved-ones, as in the

case of *amae*. However, the fact remains that different languages *do* have different ways

of categorizing and labeling their affective worlds, and these lexical differences may

result in different emotional perceptions and experiences.

### Preference for Perception

Unfortunately, most studies that examine the link between language and emotion

focus almost exclusively on emotion perception and not on emotion experience.

Perception studies are much easier to run because researchers can use standardized

emotional visual stimuli and quantify participants' responses, but relying on perception studies is a huge limitation in the research (Izard, 2009). Studies that delve into emotion experience are few and far between. In one such rare study, researchers investigated *grima*, a culturally unique emotion found in Spanish that describes the sensation that occurs when hearing an unpleasant, high-pitched sound, such as "a piece of chalk on a blackboard, a fork scratching a plate, or the scraping of fingernails on a surface" (Schweiger & et al., 2017). While this sensation is experienced cross-culturally, English does not have a word to succinctly describe the feeling. The closest lexical equivalent is *disgust*.

Researchers wanted to know if Spanish speakers experience *grima* differently than speakers of languages who lack an equivalent term. First, researchers identified elicitors of *grima*. They followed this work by examining the experience of *grima* by measuring skin conductance maxima (SCM), heart rate (HR) deceleration and acceleration, hedonic valence, and emotional arousal ratings for both *grima* and *disgust* while participants were subjected to eliciting events (Schweiger & et al., 2017). Although *grima* and *disgust* did not differ in terms of affective ratings and skin conductance, they did differ significantly in terms of HR changes, offering some support in favor of the notion that *grima* is experienced as a culturally unique emotion because of its unique physiological makeup (Schweiger & et al., 2017; Schweiger, Rodriguez Monter & Alvaro, 2018). This is just a single study, so the findings must be viewed skeptically. What is more noteworthy is the method of the study. Schweiger and colleagues offer a window into how we might study emotion experience by measuring and comparing physiological markers and changes.

*No Consensus on a Definition for Emotion*

Of course, it would be easier to study emotion experience (and emotion as a whole) if scientists could land on a definition of emotion. Although researchers generally agree on emotion "activation, functions, and regulation," there is currently no consensus on a definition of emotion (Izard, 2010). To skirt this issue, the literature on emotion tends to define emotion in reference to a list of emotion words, such as anger, sadness, and joy. This can only be a temporary solution. Without a universal definition, researchers may categorize emotions based on "behaviors, physiological responses, feelings, thoughts, or any combination thereof" (Izard, 2009). It is no wonder disagreements, confusion, and conflicting results continue to dominate the field. Without a universal definition, researchers are operationalizing 'emotion' differently and may be researching and measuring completely different concepts, ultimately leading to a fruitless debate.

In an attempt to clarify the situation, Izard (2010) contacted 34 prominent emotion researchers, asked them a series of free-response questions pertaining to emotion, and conducted a qualitative analysis of their responses, revealing information about emotion function, activation, and processes. While their responses varied widely, there were common threads, leading Izard to conclude that "emotions have multiple and quite significant functions in motivating and focusing individual endeavors, social interactions, and the development of adaptive and maladaptive behavior" (Izard, 2010). Izard (2010) continued with a rather broad definition:

> Emotion consists of neural circuits (that are at least partially dedicated),
>
> response systems, and a feeling/state process that motivates and organizes

cognition and action. Emotion also provides information to the person

experiencing it, and may include antecedent cognitive appraisals and ongoing

cognition including an interpretation of its feeling state, expressions, or social-

communicative signals, and may motivate approach or avoidant behavior,

exercise control/regulation of responses, and be social or relational in nature

(Izard, 2010).

Very few studies have attempted to accomplish what Izard set out to do, and the

scope of their work must be appreciated. However, ten years later, there is still no

consensus on a definition. Izard contacted 34 emotion researchers who fell into

different camps of thought and collected information on their theories. This information

was then synthesized and worked into a single paragraph, encompassing each myriad

thought. This provided some clarity and perspective and drew attention to the problem,

but emotion research is still essentially stuck in the same spot. Researchers are still

operating with conflicting definitions (or no definition at all) of emotion. Confusion

continues to pervade the field and replication is difficult. Izard's study was a good

conversation and a good first step, but far more work needs to be done to reach a single

satisfactory definition. Until then, researchers will have to rely on discrete emotion

labels, such as happy, sad, or mad, to define what they mean by emotion, a problematic

solution at best.

### Terminological Ethnocentrism and NSM

English, and its accompanying array of emotion words, such as happy, sad, or

mad, is not a "neutral scientific language for the description of emotions" (Wierzbicka,

2009). English is subjective and culturally dependent, and the emotion words that

scientists use to discuss emotion (such as happy, sad, or mad) are anglocentric folk concepts. Linguist John Lucy identified this problem a quarter of a century ago when he wrote, "the formulation of the linguistic relativity problem bears the traces of our own linguistic structures and dominant ideological perspective" Lucy, 1997). English emotion words are often taken for granted and used as the "baseline" for comparing how well other languages map onto English (Wierzbicka, 2009). The Big Six (happiness, sadness, anger, disgust, fear, and surprise) have been ingrained in emotion research and are used as if they are "real entities in nature" (Barrett, 2006). This is not to say that there is no evidence supporting biological universal emotions, but there is enough evidence challenging the basic emotion approach that it cannot be viewed as an absolute. To hearken back to the beginning of this literature review, the basic emotion approach has fostered an interest in "universal emotion potential, rather than emotional practice" (Mesquita & Frijda, 1992). Thus, researchers need to move away from English as the natural baseline for emotions.

Wierzbicka and other like-minded colleagues argue that the Natural Semantic Metalanguage (NSM) should be applied when studying emotion (especially cross-culturally) because it offers a culture-independent perspective. NSM is a linguistic theory founded on concepts of universal grammar and argues that there is a small set of semantic primitives, or primes, that are linguistically universal. Primes are primitive because they cannot be reduced or defined further, and they are universal because they can be translated into every language (Goddard, 2008). Thus, NSM starts from the "bedrock" of universal human concepts (Wierzbicka, 2009). NSM is essentially a "mini vocabulary" that represents the "lexical and grammatical intersection of all languages"

(Goddard, 2010). Currently, there are 63 semantic primes that NSM recognizes
(Goddard, 2010). These include:

> I, you, someone, people, something/thing, body; this, the same, other; one, two,
> some, all, much/many; good, bad; big, small; think, know, want, feel, see, hear;
> say, words, true; do, happen, move; there is, have; live, die; when/time, now,
> before, after a long time, a short time, for some time; where/place, here, above,
> below, far, near, side, inside; not, maybe, can, because, if; very, more; kind of,
> part of; like (Goddard 2002, p. 14).

Wierzbicka has found that emotion terms across languages tend to "combine
references to feeling and thinking with references to wanting" (Wierzbicka, 2009). As
such, terms such as "'feel, 'think,' 'know,' 'want,' 'do,' 'happen,' and 'body,'" should
be the foundation of emotion research (Wierzbicka, 2009). In theory, this would free
scientists from the biased constraints of conducting research in English (or any other
language).

Of course, NSM is not free of criticism. The main point of NSM is that complex
and culture-specific concepts (unique emotions) can be "decomposed" into primes and
explained in those terms (Riemer, 2006). Some researchers are concerned that "a good
deal of meaning gets lost in translation when culture-specific concepts are rewritten as
prime concepts" (Shwedar, 2013). Provided with the appropriate primes, could a native
speaker of a particular language recognize the "original culturally salient" emotion?
(Riener, 2006). Additionally, provided with the appropriate primes, could a *non*-native
speaker of a particular language understand the translated emotion "with all of its
implications and connotations?" (Riener, 2006).

While robust research on the part of Wierzbicka and other prominent colleagues supports the claim that the primes identified by NSM are universally present across all languages, what is less certain is how readily and accurately culturally-unique emotions can be back-translated from NSM primes. In other words, the *utility* of NSM has yet to be fully assessed. Ultimately, this is a problem beyond the scope of this literature review. NSM is a promising approach that offers researchers a potential way to study emotion in an objective, neutral, and culturally-independent way. However, if the translations NSM produces are somehow lacking in original depth or meaning, then perhaps researchers should continue to adopt lexicons from pre-existing languages (such as English) and simply be more mindful when identifying, labeling, and translating emotions. It is possible that some degree of terminological ethnocentrism is unavoidable in this area of research.

### Language and Culture

In addition to needing to define *emotion* and tackle terminological ethnocentrism, researchers studying linguistic relativity and emotion must contend with culture. Language is deeply connected to culture. Some researchers claim that even where cross-linguistic differences exist in emotion, such differences cannot be attributed to the presence or absence of a specific linguistic concept or construction (Jing-Schmidt, 2019). Any observed differences in emotion perception and experience are due to culture, which plays an important part in "prioritizing and institutionalizing values and conventions likely to influence cognitive behavior" (Jing-Schmidt, 2019). Such a statement poses a monumental question: how do researchers separate language from culture? It is a question that appears to be often overlooked in cross-linguistic emotion research but in order to support the claim that language influences emotion,

then ecological or cultural factors need to be controlled. Such studies are few and far between, but the solution may be simple. By comparing communities with "similar language patterns but different cultures" or "communities with similar cultures but different language structures" in non-verbal tasks, researchers may be able to rule out culture as the cause for performance.

For example, researchers Lucy and Gaskins examined Japanese and Yucatec. Both languages are similar in that they "rarely mark plurals and obligatorily uses classifiers to count constructions" (Björk, 2008). However, Japanese and Yucatec culture is quite different. When compared to English speakers on various non-linguistic tasks, Japanese and Yucatec speakers performed similarly, and it was argued that it was language, and not culture, that produced such results (Lucy & Gaskins, 2003). Much like with the *grima* example, it provides an idea of how these types of experiments could be run. In the future, researchers should conduct comparative studies that utilize non-linguistic tasks on participants whose languages share similar structures but whose cultural distance is wide (cultural distance is a construct that can be measured. For further discussion, see Shenkar, 2001). If correlations between language structure and certain response patterns from non-linguistic tasks emerge, then researchers will have better evidence supporting the claim that it is *language* and not *culture* influencing cognition.

### Control Groups and Replication

Within the research available there were two methodological issues that reappeared: (A) a lack of control groups, and (B), a lack of replication. Control groups benefit and enhance any experiment by confirming that results are due to the manipulation of the independent variable and not some other extraneous factor(s).

When a control group is not included, the results of the study *could* be due to the independent variable (in the case of this literature review, language), but the results could *also* be due to a third variable, such as age. Control groups help rule out these possibilities. There is also a replication crisis occurring across most academic disciplines, including emotion research. Replication is an essential pillar of the scientific method. When a study is replicated and the same findings are reproduced, this provides supporting evidence in favor of the research (the inverse, which is just as important, is also true). When studies are not replicated, the credibility of the research is greatly undermined.

### *Asking the Right Questions*

Beyond the methodological limitations, one must also consider if researchers are asking the right questions. Thus far, the debate on the effect language might have on emotion has seemed largely dichotomous. Researchers seem to fall into one of two camps of thought: (1) Language absolutely plays a role in emotion perception and experience, and (2) Language absolutely does not play a role in emotion perception and experience. Efforts are thrown into arguing for one side or the other. The body of research as a whole seems to point to the fact that language *does* play a role in emotion perception and experience, but the *significance* of this relationship is unclear. In other words, researchers should not be looking for clear-cut distinctions. Instead, they should be asking to what *degree*, and in what way and under what circumstances, does language play a role.

There is an abundance of compelling evidence that supports both the basic emotion approach *and* the constructionist approach. In the same vein, there are also numerous problems challenging both theories, enough to shed doubt on the authority of

either approach. The basic emotion approach argues that emotions are universal and that people from all cultures can accurately perceive these emotions in the form of facial expressions, but the research methods (fixed-choice paradigms and stereotyped face images) that led to these conclusions are controversial. When free-choice paradigms are utilized, participant agreement on emotion categorization and labels decreases, as demonstrated by Gendron & et al., 2014. Thus, the basic emotion approach is not the full story.

The constructionist approach was developed to address the variation in cross-cultural emotion perception and experience that the basic emotion approach could not account for. The constructionist approach argues that language helps "acquire, organize, and use the concept knowledge that is an essential element in emotion perceptions and… experiences" (Lindquist, Satpute, & Gendron, 2015 ). Thus, language plays an active role in constructing our emotional lives, a notion that is supported by the studies in which researchers observed improved or impaired emotion capabilities depending on whether participants were granted or restricted access to emotion words, respectively (Barrett, Mesquita & Gendron, 2011; Gendron & et al., 2012; Linquist & et al., 2006).

However, emotion perception and experience cannot be dependent on language alone. Just because a language lacks a word for a particular emotion does not mean that speakers of that language cannot perceive and experience that emotion. Sauter, LeGuen & Haun (2011) demonstrated this when they studied speakers of Yucatec Maya. Although Yucatec Maya does not lexically distinguish disgust from anger, speakers of Yucatec Maya in this study could still distinguish between expressions of disgust and

anger (Sauter, LeGuen & Haun, 2011). Ergo, researchers concluded that language is not necessary for emotion perception. The same can be said for emotion experience. Consider the following emotions.

*A)* Gemütlichkeit

Gemütlichkeit is a culturally unique emotion found in the German language, with a close counterpart, gezelligheid, found in Dutch. Gemütlichkeit combines the meaning of a Middle High German word, gemüete, which means "something that touches the soul," and an Old High German word, gimuati, which is a "common way of world comprehension, nice, pleasant" (Mizin & Petrov, 2021). Traditionally, psychologists have defined the term by breaking it up into its component parts, such as: (a) the quality of the good-natured, sanguine, easy-going disposition; (b) good nature; (c) kindliness; (d) geniality; (e) pleasantness; (f) cordiality; (g) sentiment, tenderness of feeling; (h) freedom from pecuniary cares; (i) comfortableness (Mizin & Petrov, 2021). Drinking wine at a Christmas market, sharing a meal with old friends, or sitting in a cozy cafe are all instances that might elicit gemütlichkeit

*B) Amae*

Amae is a culturally unique emotion found in the Japanese language. At a glance, it is the ability "to depend and presume upon another's love or bask in another's indulgence" (Doi, 1992; Niiya, Ellsworth & Yamaguchi, 2006). There is no lexical equivalent of the term in English. The closest translations include: whining, sulking, coaxing, pouting, wheedling, being spoiled, and being pampered (Johnson, 1993). However, all of these translations carry a negative connotation, and amae is not a negative emotion in Japan. For those foreign to the concept, amae is best captured by

the mother-child relationship. "A 6-year-old child climbing on the knees of her mother and asking her to read a storybook while the mother is working on the computer" is an example of amae understood by Westerners (Niiya, Ellsworth & Yamaguchi, 2006). The child experiences the "sweet sensation of being taken care of," while the mother feels "needed and trusted" (Niiya, Ellsworth & Yamaguchi, 2006). It is important to note, however, that amae also occurs within the context of adult relationships, such as between roommates and domestic partners.

*C) Toska*

Toska is a culturally unique emotion found in the Russian language. It is often translated into English as *yearning*, but the emotion is much more complex than yearning. In addition to yearning, it is further defined by feelings of sadness, melancholy, anxiety, unrest, gloom, and boredom. Vladimir Nabokov captures the Russian essence of toska in his writing.

> No single word in English renders all the shades of toska. At its deepest and most painful, it is a sensation of great spiritual anguish, often without any specific cause. At less morbid levels it is a dull ache of the soul, a longing with nothing to long for, a sick pining, a vague restlessness, mental throes, yearning. In particular cases, it may be the desire for somebody of something specific, nostalgia, love-sickness. At the lowest level, it grades into ennui, boredom.

Even without a word to label the aforementioned emotion experiences, most people have most likely experienced instances of gemütlichkeit, amae, and toska. Most people have also most likely experienced other emotions, such as *sisu*, *mono no aware,*

*pena ajena, saudade, hiraeth,* and *lykke*, even if they do not have a word for them either. Language is not a requirement to experience these emotions. However, it is suggested that having a word for an emotion contributes to the emotion by "altering the intensity and specificity of emotional experiences" (Gendron & et al., 2014). The existence of these emotion words "enhances the extent of awareness about the emotional experience" (Schweiger & et al., 2017). Thus, language seems to influence emotion perception and experience.

A rephrasing of the question, *To what degree does language play a role in emotion perception and experience?*, is, *At what stage (or process) does the influence occur?* This question is at the heart of the debate on linguistic relativity and emotion, though it often gets lost in the confusion. Unfortunately, no conclusions can be drawn at this point in time. The research is still in its infancy, and there are methodological issues, such as defining emotion, conducting research in a less Anglocentric way, separating language from culture, and instituting more rigorous scientific discipline (by incoperating control groups and replication), that need to be addressed before conclusions can be made. All that can currently be stated with confidence is that language *probably* plays a role in emotion perception and experience.

### Implications

The practicality or usefulness of such a finding is still up for debate. The possible role language plays in emotion perception and experience may have broad implications for emotional intelligence, recognition, and regulation in both personal and psychotherapeutic settings. It has been suggested that the "number of available emotion terms in a speaker's language" correlates with "emotional intelligence for that

speaker" (Robinson & Altarriba, 2014). It is thought that having a broader array of emotion words aids in recogonizing, naming, and understanding emotions (Robinson & Altarriba, 2014).

Certain individuals struggle with their emotional lives more than others. Individuals with autism spectrum disorder (ASD) often have alexithymia and emotion regulation difficulties (Morie & et al., 2019). As previously discussed, alexithymia, which is literally translated as "no word for feelings," is characterized by difficulties in "identifying, differentiating and describing feelings" (Grynberg & et al., 2012; Morie & et al., 2019). These emotional difficulties often manifest as mood disorders (Morie & et al., 2019). Targeting alexithymia by increasing emotional vocabulary and making it more accessible (as demonstrated in the study conducted by Nook, Lindquist & Zaki) may mitigate mood disorders in individuals with ASD.

Of course, alexithymia is not just a comorbidity of ASD. Individuals with other mood disorders, such as depression and anxiety, also often experience alexithymia (Honkalampi & et al, 2000; Karukivi & et al., 2010). Being able to apply a broad emotional vocabulary has been linked to "lower incidence of depression in both children and adults, overcoming eating disorders, as well as an overall reduction in mental illness" (Robinson & Altarriba, 2014). Interestingly, there is some evidence that suggests that alexithymia is "transmitted across generations," so that "caregivers who struggle to communicate and express their feelings create an impoverished environment for children to learn conceptual knowledge about emotions" (Lindquist, MacCormack, Shablack, 2015). In one study, it was found that "college students' level of alexithymia" was "positively correlated with their mothers' retrospective difficulty

expressing feelings" when they were young (Lindquist, MacCormack, Shablack, 2015).

Thus, it may be possible to improve the emotional lives of individuals who struggle

with emotion regulation and intelligence by providing them with an enhanced emotion

vocabulary.

In certain psychotherapeutic settings, therapists may be able to strategically

apply language use when working with bilingual speakers. Evidence suggests that a

bilingual's first language (L1) is often the "language of emotional expressiveness"

(Robinson & Altarriba, 2014). It is thought that emotions are "activated more strongly"

in L1. Conversely, although bilinguals are able to communicate emotion proficiently in

their second language (L2), evidence suggests that a bilingual's L2 is more emotionally

distant (Robinson & Altarriba, 2014). Thus, when discussing emotionally traumatic

events in therapeutic settings, bilinguals can engage in code-switching, in which they

switch between using their L1 and their L2 to discuss the experience. This strategy

allows bilinguals to "distance themselves from negative events and feelings," perhaps

facilitating a more robust conversation between patient and therapist (Robinson &

Altarriba, 2014).

On an individual level, expanding one's emotional vocabulary by incorporating

words from different languages may provide one with a more precise and rich way of

perceiving and experiencing the world. Instead of saying that one feels *happy* to be

home for the holidays, one might more precisely describe the feeling as *gemütlichkeit*

or *gezelligheid*. Instead of saying that one feels determined to complete a strenuous

obstacle, one might more accurately describe oneself as feeling *sisu*. And instead of

saying that one misses a departed loved one, one might more poignantly label the

feeling as *toska*. Regardless of the evidence that either supports or challenges linguistic

relativity, what can be said definitively is that the realm of emotion is vast, and there

are unique emotions encapsulated by single words in some languages that are not

present in others. To put it metaphorically, these words could be used as keys to unlock

the emotional kaleidoscope of the human condition.

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