Language

A Toolbox for Sharing and Influencing Social Reality

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ABSTRACT—*The key role of language is often neglected in explicitly formulated theories of cognition, affect, and social behavior. Implicitly, though, the relationship between language and mind is at the heart of psychological science. Two major research programs—linguistic universals and linguistic relativity—originate in opposite philosophical positions, assuming either that language reflects the mind's ideas and free will or that language differences govern and restrict the mind. However, modern psychological research was able to begin illuminating the power and richness of linguistic influences only after the priority debate was given up and language and cognition were treated as integral parts of the same process. Beyond the confines of referential communication, conceived as cooperative transfer of symbols referring to common world knowledge, some of the most intriguing phenomena are detached from referential bonds, reflecting unintended, emergent, or even random outcomes of verbal interaction. Indeed, the effectiveness of verbal priming may be actually contingent on language users' failure to understand the primes' referential meanings and implications.*

The limits of my language are the limits of my world
—Ludwig Wittgenstein

Language is given to humans in order to conceal their thoughts
—Attributed to both Taillerand and Dante

Isolating the big theoretical questions of psychological science is not an easy task when it comes to the fascinating topic of language. There is a peculiar neglect of linguistic variables in psychological theorizing, even in social psychology (cf. Aronson, Wilson, & Akert, 2005; Atkinson, Atkinson, Smith, Bem, & Nolen-Hoeksema, 2000; Myers, 2003; E. Smith & Mackie, 2000), although one can hardly think of anything more social than language. Outside the domain of verbal behavior proper, contemporary theories of cognition, affect, and behavior abstract from the fact that most research proceeds through the medium of language (i.e., verbal instructions, interviews, ratings, report, and conversation between experimenters and participants). Theories hardly ever explicate the status of language as it is involved in memory, reasoning, inference making, judgments, decisions, attitude change, negotiation, evaluation, or attribution (Clark, 1969; Fiedler, 2007; Rosch, 1976; Spelke, 1992).

Implicitly, though, there can be no doubt that one big question, which has intrigued philosophers and psychologists for centuries, is at the heart of the whole psychological enterprise: How does language relate to cognition? Originating in the seminal writings of Plato, Aristotle, Augustinus, Arthur Schopenhauer, Willhelm von Humboldt, Ludwig Wittgenstein, Karl Bühler, Benjamin Whorf, Edward Sapir, Paul Grice, and John Searle, this issue remains central to the modern psycholinguistic approaches of Herbert Clark (1996b) or of Robert Krauss and Susan Fussell (1996), and it is the focus of the present article.

The aim of this article is first to point out the historical origins of psychology's interest in the relationship between language and cognition, from ancient philosophy to contemporary psychological science. This article focuses on two questions raised by psychological research. First, does language determine or reflect cognition? Second, if language and cognition are integral parts of the same adaptive function, how can the interplay between the two be understood? Whereas answers to the former question have remained equivocal, modern research on the latter question has proven very productive. Against the background of the current mainstream paradigm of referential language use, with its emphasis on cooperation and mutual understanding, I will then argue that the full power and richness of the linguistic toolbox is only apparent when its nonreferential uses (unintended, emergent language influences, priming effects, misunderstandings, and even stochastic variation) are taken into account.

LANGUAGE AND COGNITION: HOW ARE THEY RELATED?

Does Language Determine or Reflect Cognition?

As to the causal antecedence of either language or cognition, both positions are omnipresent in the long history of philo-

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sophical ideas preceding modern behavioral science. The huge research programs on linguistic universals (Chomsky, 1968; Lenneberg, 1967) and linguistic relativity (Brown, 1957; Gleitman & Papafragou, 2005; Slobin, 1996)—emphasizing, respectively, the dependence of language on biological and cognitive constraints or the causal impact of language differences on cognition—are both rooted in philosophical positions articulated ages ago.

On one hand, in Plato's (427–347 BC) philosophy, language was subordinate to the primary existence of ideas. Plato was concerned with the semiotic assumption that names reflect the essence of ideas. In Augustinus's (354–430) philosophy, the primacy of internal thoughts followed from the fundamental role assigned to the free will. Augustinus concluded "I exist because I am thinking" long before Descartes (1596–1650), locating *lingua interna* within the inner mind, and he continued to impact on medieval philosophy, with its focus on universals. The a priori status assigned to cognitive categories reappeared vividly in the philosophy of the Enlightenment, particularly in Kant's (1724–1804) critique of pure and practical reason, which is still visible in contemporary language philosophy (Apel, 1996).

On the other hand, the reverse argument that language influences and shapes our cognitive operations to a considerable degree, as expressed in Benjamin Whorf's (1956) and Edward Sapir's (1944) seminal work on linguistic relativity, may be traced back to Aristotle (384–322 BC), who, unlike Plato, allowed signs to exist independently of designated entities. The position that is now commonly known as *linguistic relativity* was vividly articulated by Wilhelm von Humboldt (1767–1835) and, within the context of philosophical romanticism, the influence of language on thought and experience was emphasized by Johann Gottfried Herder (1744–1803). Unlike the linguistic universal position, which emphases the mental, logical, and biological constraints imposed on all languages, linguistic relativity stresses the cognitive and cultural differences between different languages.

Not surprisingly, clear-cut evidence for a causal role of language is scarce. It is very difficult, if not impossible on a priori grounds, to prove a pure language effect (Clark, 1996a) unconfounded by cognitive constraints, brain capacity, and architecture (Lenneberg, 1967), and the structure of the world. Consider linguistic relativity's favorite paradigm, color perception. In spite of countless studies conducted to prove that color perception depends on the number and diversity of color terms in different languages' lexicon, cogent evidence for this hypothesis remains modest (Heider, 1972). The impact of nonlinguistic factors (such as sensory equipment, environmental input of color discrimination tasks, or cultural knowledge linked to color variation) on color perception is too dominant. Other paradigms, such as emotion words, gender nouns, or spatial concepts, yielded similarly weak evidence. The judgment of Solomon reached in novel accounts of linguistic relativity is that language programs and guides mental activity (Gleitman & Papafragou, 2005; Hunt & Agnoli, 1991; Kay, 2006) without placing overly strong constraints on the mind.

It is commonly assumed that the evolution of language had a marked effect on phylogenetic development (Corballis, 2007), which is mirrored in ontogenetic development (Bruner, 1985; Gelman & Heyman, 1999). Moreover, it is also assumed that children solve practical tasks with the help of their speech just as they solve them with their eyes and hands (Vygotsky, 1978). However, arguments for nonlinguistic origins, strongly influenced by Vygotsky's opponent Piaget (1958), are (at least) equally compelling. As Bloom (2004) puts it in the title of a recent *Nature* article, "children think before they speak." Research on deaf people (c.f. Meadow, 1980), inspired by Furth's (1966) intriguing book, *Thinking Without Language: Psychological Implications of Deafness*, found cognitive functions to be highly independent of linguistic skills.[1]

How Can the Interplay of Language and Cognition Be Understood?

Given this equivocal state of affairs, research and theorizing on social cognition, action, and decision did not give much consideration to genuine language influences. Instead, it was taken for granted that all behavior, including verbal behavior, has to be explained in terms of basic cognitive functions, such as memorized knowledge, retrieval, inferences, goals, and intentions. It was only rather recently that the flourishing research programs in cognitive and social psychology were reminded of language as a causal origin of cognitive and social phenomena, word use as an origin of cultural differences (Kashima, Kashima, & Kim, 2006), conversation contracts between experimenters and participants as explanations of cognitive fallacies (Hilton, 1995), framing effects on judgment and decision making (Tversky & Kahneman, 1981), language production causing memory bias (Higgins, 1981), or of communicability as a determinant of social stereotypes (Conway & Schaller, 2007).

These relatively new approaches take a functional view and presuppose an active part of language in the dialectic interplay of language and cognition. One characteristic of these approaches is a shift from the first to the second aspect of the language–cognition relationship. Rather than searching for an answer to the antecedence question—whether the mind speaks or the tongue thinks—the aim is to describe and substantiate how language and cognition are mutually contingent on each other in complex and manifold ways. Yet, researchers continue to draw on the philosophical and cultural wisdom that language is essential to success and social adaptation. Searle's (1969) tenet that you can have language without money, property, government, or marriage, but you cannot have money, property, government, or marriage without language conveys the insight that verbal skills are at the heart of political influence, power,

[1]Before the start of formal language training, deaf children are hardly inferior to children exposed to language.

negotiation, persuasion, propaganda, media presentation, literature and are vital to interpersonal harmony and conflict resolution.

Thus, the thesis (cognition and logic are independent of language) and its antithesis (social impact and success are contingent on language) together provide the synthesis that language is a tool for effective action, not for logical thinking. Exerting verbal influence must not be equated with verbal influence on logic or rationality. Linguistic behavior is not confined to sharing and describing reality correctly and consistently but may involve changing and obscuring reality. Successful language use need not involve correct syntax, grammatical form, logical propositions, sound references, high-quality pronunciation, or errorless comprehension. Rather, successful speech acts (Searle, 1969) may often enough result from mistakes, misunderstandings, irrational inferences, and ungrammatical phrases. Adopting this perspective, and freeing language of its rationalist straight jacket, is the key to recognizing many novel ways in which linguistic stimuli can causally affect cognition and behavior. This is my perspective on new insights into the old philosophical topic in modern psychological science, and it is the central message I want to convey in the remainder of this article. In presenting this view, I concentrate on language research in the area of social interaction and social judgment while excluding other major areas that I could have focused on, such as language in artificial intelligence (Graesser, Lu & Jackson, 2004) or language and intercultural psychology (Kashima et al., 2006).

HOW DOES MODERN RESEARCH CONSTRUE THE ROLE OF LANGUAGE IN SOCIAL INTERACTION?

Two types of current approaches can be distinguished. On one hand, in what may be termed neo-Whorfian approaches, lexical stimuli have been shown to impact inferences, judgments, and decisions (Loftus, 1975; Maass, 1999; Pennebaker & King, 1999; Semin & Fiedler, 1988). On the other hand, Gricean approaches (Grice, 1975) emphasize the conversational constraints imposed by all kinds of language games[2] on cognition and behavior (Bless, Strack, & Schwarz, 1993; Clark, 1996a; Higgins, 1981; Schwarz, 1994; Sperber & Wilson, 1995; Wänke, 2007).

Both types of approaches are usually interpreted under the premise that language is to convey "meaning and understanding" (Hörmann, 1976). This premise is nicely expressed in Clark and Clark's (1977) quotation of Otto Jespersen: "The essence of language is human activity—activity on the part of one individual to make himself understood, and activity on the part of that other to understand what was in the mind of the first." (p. 3)

This premise is illustrated in the upper part of Figure 1, using a somewhat refined version of Bühler's (1934) organum model.[3] It is taken for granted that what a communicator means and intends to convey is encoded into verbal symbols; the recipient's task is to understand the intended meaning by decoding the symbol string. To be sure, the collaboration between communication partners on the meaning of the symbols is not confined to literal meaning but includes all kinds of conversational implicatures (Grice, 1975) and shared pragmatic knowledge about the reference objects denoted by the symbols. Thus, the meaning of the symbol string "9/11 governs the US" goes beyond the verb "govern" and the raw numbers and letters of the utterance; it entails many inferences about recent history, political attitudes, emotions, and experiences that provide common ground (Clark, 1996b) for referential communication.

No doubt, referential communication already provides a powerful model that leaves ample degrees of freedom for flexible and creative language use. The communicator need not explicitly include in the symbol string all that he or she wants to say. Likewise, the recipient is not restricted to understanding only what is explicitly symbolized. Nevertheless, one crucial restriction of this model is that the extended meaning of symbols triggers the entire process, including both what is stated explicitly or inferred implicitly. Whatever influence language exerts is restricted by semantic and pragmatic rules linking symbols to referential knowledge. Through this coordinated, rule-based, and genuinely cooperative process, communication partners are assumed to jointly construct the world using rules that map symbols onto referents.

TOWARD A MORE LIBERAL CONCEPTUALIZATION OF LANGUAGE

I will now depict a more liberal, less restrictive model of communication that allows for even more flexible language functions and even more creative explanations of wanted and unwanted communication outcomes. This model includes nonreferential language use depicted in the bottom part of Figure 1. Although less widely known and accepted, I believe this liberalized conception affords a more adequate account of contemporary research in cognitive psychology, social cognition, and bounded rationality (Gigerenzer, 2004; Simon, 1982). The core assumption of this new perspective on the relationship between language and cognition is that several restrictions of the referential-communication model have to be given up in order to make some intriguing language effects visible. Accordingly, language is not generally a referential tool for recipients to decode or infer what communicators mean to say. Oftentimes, language is an unbounded tool for recipients to make inferences that were not authorized or meant by communicators or not

[2]According to Wittgenstein's (1968) notion of language games, linguistic terms assume their meaning and function only in the context of interpersonal games with explicit and implicit rules and game-specific experiences.

[3]Bühler's organum metaphor referred to Plato's conviction that language is an organum for one person's communicating with another about things (cf. Graumann, 1992).

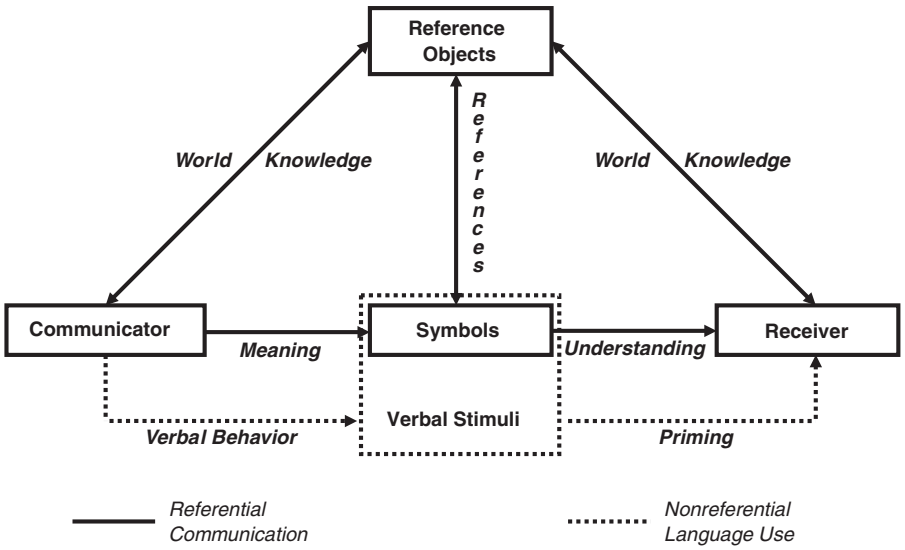

Fig. 1. Graphical illustration of referential communication (rooted in Bühler's, 1934, organum model) and nonreferential communication.

constrained by symbolic meaning, and communicators are not obliged to be understood by their recipients. Language sometimes provides an almost stochastic tool that brings about unintended, unpredictable, emergent consequences. Language affords a rich multipurpose toolbox for all kinds of social interactions and interpersonal moves (Rips, 1998). It is often competitive rather than cooperative, causing incongruence between communication partners and divergent inferences. Thus, whereas referential communication is certainly well suited for some speech acts (cf. Searle, 1990; Wish, D'Andrade, & Goodnow, 1980), such as description and instruction, many other speech acts (or "speech emergencies"), such as deception, intimidation, ingratiation, equivocation, confusion, or distraction, violate referentiality and cooperation.

These counterexamples to the rule of well-coordinated communication driven by jointly understood referential links do not just highlight uncooperative or antisocial communication goals. Rather, they point to unintended or even stochastic results, serving creative and adaptive functions such as random variation in evolution. Of most theoretical interest, however, for the overarching topic—the relation between language and cognition—is the idea that language can trigger extralinguistic behaviors independently of the language symbols' referential meaning, mediated through the direct causal paths from verbal stimuli to aspects of cognition and behavior that are detached from meaning. Ironically, these influences are often strongest when language users are unaware of the referential meaning and implicatures that could reveal any motives or vested interests.[4] In linguistic terminology, these direct causal functions of language that bypass referential understanding may be called *perlocutionary*, as distinguished from the *illocutionary* function of pragmatic knowledge and the *locutionary* function of semantic knowledge.

EMPIRICAL EVIDENCE FOR NONREFERENTIAL LANGUAGE EFFECTS

What are these nonreferential language functions? What empirical evidence exists to substantiate such extralinguistic routes triggered by linguistic stimuli? In the following review, I mostly refer to one lexical paradigm in which I am myself involved—the linguistic category approach (Semin & Fiedler, 1988, 1991)—although other paradigms could have been used as well, such as Higgins' (1981) communication-game approach or Markman's work on cognitive inferences based on parts of speech (Markman & Ross, 2003).

At first sight, the linguistic-category approach appears to be located fully on the ground of referential communication. It assumes a taxonomy of four word classes that can be used to describe social behaviors: descriptive action verbs (DAVs; e.g., *feed*, *spit*), interpretive action verbs (IAVs; e.g., *help*, *insult*), state verbs (SVs; e.g., *love*, *contempt*), and adjectives (ADJs; e.g., *supportive*, *disrespectful*). These four word classes differ systematically in their referential meaning and in their attributional implications. As the abstractness of the predicate increases (from DAV to ADJ), the behavior expressed in a sentence is increasingly attributed to internal, stable, and consistent dispositions within the sentence subject, independent of the situational context. The linguistic intergroup bias (Maass, 1999; Wigboldus & Douglas, 2007) reflects these distinct attributional implications in the realm of intergroup discrimination. When talking about outgroup behavior, people regularly use more abstract terms to describe negative behaviors and use more

[4]It is interesting to note that Schopenhauer was well aware of, and quite explicit about, the independence of rationality, reality, and persuasion, which he called "eristic dialectics," according to Hübscher (1966).

concrete terms to describe positive behaviors, thus suggesting more internal attributions for negative behaviors and more external attributions for positive behaviors. In contrast, with reference to ingroups, more abstract terms are used to describe positive behaviors, and more concrete terms are used to describe negative behaviors, suggesting internal, global attributions for positive behavior and external, local attributions of negative behaviors.

The linguistic intergroup bias affects recipients (Wigboldus, Semin, & Spears, 2000) across many intergroup settings, such as communication among or between ethnic groups (Maass & Arcuri, 1996), gender talk (Kashima, 2000), and final speeches of prosecutors versus defense attorneys in the courtroom (Schmid & Fiedler, 1998), and these findings generalize from the intergroup level to the interpersonal level (Fiedler, Semin, & Koppetsch, 1991; Maass, 1999).

All these findings provide rich evidence for referential communication. To be sure, the inferences from linguistic categories on social stereotyping are not confined to the words' literal meaning but also reflect their pragmatic and attributional implicatures. However, as these implicatures are shared by language users, they are a genuine part of the social meaning of verbs and adjectives. Person C's use of abstract terms (ADJs like helpful or clumsy) invites Person P to infer that the subject is showing a behavior regularly and dispositionally; that his or her behavior generalizes across many other object persons; and that the behavior is to be attributed to the subject, rather than the situation. These inferences go beyond the words' denotative meaning, but they are nevertheless part of the word's extended referential meaning. Abstract ADJs suggest internal attributions just as concrete DAVs imply situation dependence beyond their literal denotative meaning. As Person C and Person P share this pragmatic knowledge, they jointly understand the attributional implicatures.

However, although verbs and adjectives provide ideal examples of linguistic symbols with highly elaborated referential links, this is but half of the story. The impact of ADJs versus DAVs does not merely reflect their implicatures. On the contrary, their impact is often due to language users missing the implicatures, which are subtle enough to prevent conscious countermeasures or reactance. Linguistic categories not only invite inferences, they are also successful in hiding these inferences, preventing communication partners from being aware of and from resisting the influence. Please note that, in this example, language serves the metacognitive function of regulating or reducing awareness, independent of any referential meaning.

There are various ways in which lexical stimuli can exert influences on cognition and behavior. Nonreferential functions of words or utterances may be called affective, semantic, or procedural priming (Bargh, 2007). The abstract stimulus word *hostile* does not merely activate referential meaning (viz., a state or trait related to aggression, suggesting internal attribution), it also primes impulsive aggression tendencies, social stereotypes associated with stigmatized groups, or negative emotional states such as fear or anger, even when extremely short exposure times preclude any awareness of the prime.

Para-semantic Effects

Generally, verbal stimuli can directly cause reflexes, actions, emotions, and regulation processes (independent of their specific semantic implications) in such diverse paradigms as verbal conditioning (Marlatt, 1972), flattery and insults, action priming (Dijksterhuis & van Knippenberg, 1998), mortality salience and stereotype threat (Steele, 1997), sexist language (Hamilton, 1991; Stahlberg, Braun, Irmen, & Sczesny, 2007) or presuppositions (Bolinger, 1973). A common feature of these phenomena is that they are independent of whether a recipient understands, accepts, or shares the meaning of symbols as intended by a communicator.

Language effects on cognition and behavior need not be sensitive to propositional logic or truth value. Thus, an affect-laden verbal stimulus like the word *nigger* can induce anger and stereotype threat (Steele, 1997) in black students and cause impaired performance on a math test, independent of the truth value assigned to the utterance; the sincerity of the source; or the pragmatic status of the utterance as an assertion, provocation, or joke. Rather, the verbal cue itself, almost like an unconditional stimulus, suffices to induce threat, just as a gentle remark can induce liking and happiness even if it obviously reflects flattery. Similarly, action priming effects, such as increasing cooperation in a dilemma game after exposure to cooperation-related words (Hertel & Fiedler, 1993; Smeesters, Warlop, Van Avermaet, Corneille, & Yzerbyt, 2003) or stabilizing influences of positive emotion verbs on close relationships (Chung & Pennebaker, 2007), are not contingent on the prime's truth value or validity, or on the recipient's endorsement. Priming effects are often most effective when subliminal primes go unrecognized.

Verbal Signalling

Verbal stimuli can inform diagnostic inferences in recipients and in uninvolved observers. For example, the occurrence rate of semantically poor "junk words," such as articles, prepositions, and pronouns, can be used to diagnose the mental and affective states of cultures and groups from written text corpora (Chung & Pennebaker, 2007; Slatcher & Pennebaker, 2006). Independently of what any communicator may have meant and what any individual recipient may have understood, the mere occurrence rate of junk words is used diagnostically. Likewise, legal experts diagnose the validity and credibility of witness reports by counting the occurrence rate of linguistic "truth criteria" (e.g., embellishing details, small inconsistencies, and self-corrections; Steller & Köhnken, 1989) that are detached from the witnesses' communication intentions and the interviewers' understanding. Communication accommodation theory

(Giles, Coupland, & Coupland, 1991) specifies diagnostic inferences of group identity from subtle signs of dialect, key words, or gestures. Likewise, abstractness of language can be used to diagnose goals and attitudes (Douglas & Sutton, 2006). It is important to note that these diagnostic language functions are rarely meant by the communicator or understood by the recipient. They are more haphazard and thus reflective of the language user's lack of control over linguistic and para-linguistic effects.

Abstract Terms Trigger Top-Down Processing

The nature of nonreferential language influences can be isolated more precisely in the context of specific paradigms, such as priming. Word classes can be shown to cause procedural priming effects, which trigger distinct cognitive operations. Abstract, decontextualized terms (like *hostile*) support top-down processes on the basis of prior semantic knowledge; whereas concrete, context-sensitive terms (like *insult*) trigger bottom-up processing of environmental stimuli. If the protagonist in a novel is said to insult another person, one is eager to learn what the insult was, who the insult was directed toward, and the situational context. Thus, the interpretation of the utterance will be tested in a bottom-up fashion against environmental information. In contrast, when the protagonist is said to be hostile, the utterance is interpreted in a top-down fashion on the basis of its semantic similarity to other traits describing the same person. Within the linguistic-category approach, Semin and Fiedler (1988) showed that these differences in the mental verification of abstract and concrete concepts hold systematically across random samples of linguistic terms (i.e., DAVs, IAVs, SVs, and ADJs) drawn from the whole lexicon. Belief in the truth of abstract attributes (e.g., Politician X is dishonest, tricky, friendly, emotional, tactical) is largely determined by the semantic similarity between the attributes. The situational context (whether observed in a pub, lecture hall, theater, or hospital), or context information about the target (i.e., whether the politician is an extravert or an introvert) are of little influence. In contrast to the similarity-driven top-down process that characterizes the verification of abstract attributes, verifying a concrete attribute involves a bottom-up process. Whether we believe or not in concrete utterances (e.g., Politician X laughs, avoids eye contact, speaks slowly, expresses anger) hardly depends on the semantic similarity between attributes, but it does strongly depend on contextual information about the situation and the target.

Just as top-down effects are supported by abstract terms, verbal priming effects on person judgments have been shown to be stronger and more congruent with the prime when abstract words are used as primes rather than specific words (Stapel, Koomen, & van der Pligt, 1996). Abstract concepts (*professor*) will more likely support inferences of high intelligence in other persons than specific concepts (*Albert Einstein*). The latter may even produce contrast effects, because specific primes are less likely to be applicable to judgment targets than abstract, more inclusive primes (cf. Schwarz & Bless, 1992).

Concrete Terms Facilitate Bottom-Up Processing

Conversely, concrete words facilitate tasks that call for stimulus-driven bottom-up processing. For example, Fiedler, Schenck, Watling, and Menges (2005; see also Fiedler & Schenck, 2001) presented dyadic behaviors in pictures or film clips and then measured the latency required to identify a gradually appearing trait word that either matched or mismatched the primed behavior. On this bottom-up task (i.e., calling for inferences from pictures), more facilitation (i.e., faster latencies) was obtained on matching trials when the encoding task asked for the verification of a concrete DAV in the picture (*stabbing*) rather than a more abstract IAV (*attacking*) or another ADJ (*hostile*). Research using concrete language to encode the raw picture contents, rather than engaging in semantic interpretation, may profit from a *picture-superiority effect* (Seifert, 1997, Weldon & Roediger, 1987), in which concrete or pictorial stimuli are memorized better than abstract verbal labels of the same objects.

Language and Constructive Inferences

Another paradigm for demonstrating nonreferential language effects is constructive memory. Fiedler, Armbruster, Nickel, Walther, and Asbeck (1996) let their participants first watch a videotaped group discussion before asking them a series of questions about whether or not a target person had shown specific behaviors, denoted by positive or negative IAVs or SVs. They then rated the target on a list of positive and negative traits that were matched in meaning to the verbs used for the questioning. Trait attributions were biased toward the valence of the questioning, despite the invariance of the original film—a clear case of a constructive memory. Ratings turned out to be higher for positive traits and lower for negative traits when the preceding questions used positive IAVs rather than negative IAVs for the target's behavior. However, it is important to note that most questions referred to target behaviors that were actually not shown in the video and that participants themselves had correctly denied. When researchers analyzed only those trait ratings corresponding to correctly denied behaviors, they found that the judgment bias was as strong there as it was in the overall analysis. Merely considering the behaviors denoted by positive or negative action verbs was sufficient to induce a constructive memory bias, contrary to the recipients' own understanding that they were not true. This demonstrates, vividly, that constructive language effects can be detached from experienced truth, contrary to semantic and pragmatic constraints (see also Fiedler, Walther, Armbruster, Fay, & Naumann, 1996; Wegner, Wenzlaff, Kerker, & Beattie, 1981).[5]

[5]Nevertheless, although detached from their (denied) behavioral references, the genuinely linguistic nature of the effect was evident in different verb (SVs vs. IAVs) classes producing systematically different effects. As SVs (unlike IAVs) imply external attribution and excuses for behaviors, using SVs for questions about negative or positive behaviors reduced the tendency to make negative or positive trait attributions, respectively. This reversal was again independent of experienced truth (whether questions were affirmed or denied).

Language and Psychological Distance

Further evidence for effects or side effects of language on cognitive processes comes from a growing new research program on construal level theory (Trope & Liberman, 2003). Accordingly, subtle linguistic manipulations of psychological distance based on past versus present tense, intimate versus nonintimate utterances, or varying levels of abstractness (Vallacher & Wegner, 1987) can induce different construal levels or grain sizes of cognitive representations. As a general rule, mental construals become more focused on central aspects and more detached from subsidiary contextual cues as distance increases. Such variation in construal level causes systematic differences in judgments, decisions, and behavior.

LANGUAGE, RATIONALITY, AND REALITY

It is unknown what proportion of language in reality reflects such immediate, nonreferential effects as opposed to the cooperative and referential processes emphasized in Clark's (1996b) common-ground principle and Grice's (1975) cooperation principle. No doubt, referential cooperation governs some speech acts, such as faithful descriptions, masterful reports, novels, or effective task instructions. However, other speech acts involve deviations from cooperative and coordinated language use. Interpersonal priming effects, suggestion, deception, and both strategic and haphazard misunderstandings may occur more frequently when communicators do not cooperate or understand each other.

For linguistic stimuli to exert strong influence, references need not be valid, truth-conserving, or understood consistently. This provides us with an explanation of why the impact of language is not strongly contingent on intelligence and rationality. Language affords a sophisticated toolbox for "doing things" (Austin, 1962; Clark & Schober, 1992; Holtgraves, 2002), such as exerting influences through priming, cueing, signalling, ingratiating, soliciting constructive bias, or making threats, but it is not as useful for precise, intelligible, high-quality information transfer through referential meaning. The toolbox is instrumental toward social and practical success, no doubt, but rationality is not a precondition for tools to be effective. Success depends no more on intelligence than on stupidity, affectivity, or tricky and often unintended and unconscious strategies.

CONCLUSIONS

How is the present answer to the "big theoretical question" of language and cognition represented in current psychological research? Indeed, the present perspective is not really representative the psychology of language proper, which is largely committed to the metatheory of referential communication and is refined in modern theories of common ground (Clark, 1996b) and cooperative conversation (Grice, 1975; Wänke, 2007). Although Grice was well aware of the fact the cooperation principle is often violated, he described even such violations as planned and controlled.

However, in addition to research carrying the explicit label of *language*, there is a good deal of other recent research in cognitive and social psychology to support the present perspective. This work is no less pertinent to language, although it is often implicitly and detached from the language literature. Modern studies of priming would be hardly possible without the power and sophistication of verbal symbol systems. Attribution, stereotyping, and persuasion studies also rely heavily on linguistic categories. This para-linguistic research program raises a new understanding of Plato's and Bühler's organum metaphor, suggesting that language is an "effector organ" for social influence, and not merely a "transmitter organ" evolved for the transmission of referential meaning.

Just as students of social cognition rarely explicate the role of language, students of language often question the relevance of the elementary lexical stimuli used in modern (social) cognition, which can hardly do justice to the full beauty of language (Edwards & Potter, 1992; Schober, 2007). Much like Skinner's (1957) behaviorist approach to explaining language by conditioning rules applied to simple verbal stimuli, the current neobehaviorist research on lexical stimuli is suspected to provide an impoverished picture of all the grammatical, semantic, stylistic, social, cultural, and emotional functions of language. Linguists are as sceptical about this approach as cognitive psychologists are about linguistic relativity and Wittgenstein's early claim that the limits of language are the limits of the world.

However, contrary to the low prestige of "merely lexical" analyses, it may turn out that these simple units afford an ideal level for studying the miracle of verbal interaction (Waxman, 1995). When language is used to regulate distance (Semin, 2007), group identification (Giles et al., 1991), and power (P.K. Smith & Trope, 2006); to induce promotion versus prevention focus (Semin, Higgins, de Montes, Estourget, & Valencia 2005); to create culture (Conway & Schaller, 2007), stereotypes (Harasty, 1997; Wigboldus & Douglas, 2007), trust, and optimism (Chung & Pennebaker, 2007); or for therapy, negotiation, and flattery, the communicator's tools are often simple lexical tools and minimal syntactic devices that can be easily learned, uttered, flexibly combined, concatenated, and modified in countless ways (Pennebaker, Mehl, & Niederhoffer, 2003). Nevertheless, all these phenomena would be impossible without the generative power of the verbal symbol system.

There is of course no singular, ultimate answer to the issue of language and cognition. However, from ancient times to modern psychological science, the trajectory of changes that this issue underwent is telling. When language and mind were conceived as opposite positions in fundamental debates about language universals or differences, in debates about free will, or when they are used as an argument of general theories of logic and rationality, then the role of language appeared weak and equivocal. In contrast, when language and mind were conceived

as two sides of the same integral whole, then the impact of language as a powerful toolbox for all kinds of social influence was vividly apparent.

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REFERENCES

Apel, K.O. (1996). *Die eine Vernunft und die vielen Rationalitäten*. [The one rationality and the many rationales]. Frankfurt, Germany: Suhrkamp.

Aronson, E., Wilson, T.D., & Akert, R.M. (2005). *Social psychology* (5th ed.). Upper Saddle River, NJ: Pearson.

Atkinson, R.L., Atkinson, R.C., Smith, E.E., Bem, D.J., & Nolen-Hoeksema, S. (2000). *Hilgard's introduction to psychology* (13th ed.). Fort Worth, TX: Harcourt Brace.

Austin, J.L. (1962). *How to do things with words*. Cambridge, MA: Harvard University Press.

Bargh, JA. (Ed.). (2007). *Social psychology and the unconscious: The automaticity of higher mental processes*. New York: Psychology Press.

Bless, H., Strack, F., & Schwarz, N. (1993). The informative functions of research procedures: Bias and the logic of conversation. *European Journal of Social Psychology*, *23*, 149–165.

Bloom, P. (2004). Children think before they speak. *Nature*, *430*, 410–411.

Bolinger, D. (1973). Truth is a linguistic question. *Language*, *49*, 539–550.

Brown, R. (1957). Linguistic determinism and the part of speech. *Journal of Abnormal and Social Psychology*, *55*, 1–5.

Bruner, J. (1985). Vygotsky: A historical and conceptual perspective. In J.V. Wertsch (Ed.), *Culture, communication, and cognition* (pp. 21–34). New York: Cambridge University Press.

Bühler, K. (1934). *Sprachtheorien: Die Darstellungsfunktion der Sprache* [Language theories: The presentational functions of language]. Jena, Germany: Fischer.

Chomsky, N. (1968). *Language and mind*. New York: Harcourt Brace Jovanovich.

Chung, C.K., & Pennebaker, J.W. (2007). The psychological functions of function words. In K. Fiedler (Ed.), *Social communication* (pp. 343–359). New York: Psychology Press.

Clark, H.H. (1969). Linguistic processes in deductive reasoning. *Psychological Review*, *76*, 387–404.

Clark, H.H. (1996a). Communities, commonalities, and communication. In J.J. Gumperz & S.C. Levinson (Eds.), *Rethinking linguistic relativity* (pp. 324–355). Cambridge, United Kingdom: Cambridge University Press.

Clark, H.H. (1996b). *Using language*. Cambridge, United Kingdom: Cambridge University Press.

Clark, H.H., & Clark, E.V. (1977). *Psychology and language: An introduction to psycholinguistics*. New York: Harcourt Brace Jovanovich.

Clark, H.H., & Schober, M.F. (1992). Asking questions and influencing answers. In J.M. Tanur (Ed.), *Questions about questions: Inquiries into the cognitive bases of surveys* (pp. 15–47). New York: Russell Sage Foundation.

Conway, L.G., III, & Schaller, M. (2007). How communication shapes culture. In K. Fiedler (Ed.), *Social communication* (pp. 107–127). New York: Psychology Press.

Corballis, M. (2007). The evolution of language. In K. Fiedler (Ed.), *Social communication* (pp. 409–434). New York: Psychology Press.

Dijksterhuis, A., & van Knippenberg, A. (1998). The relation between perception and behavior, or how to win a game of Trivial Pursuit. *Journal of Personality and Social Psychology*, *74*, 865–877.

Douglas, K.M., & Sutton, R.M. (2006). When what you say about others says something about you: Language abstraction and inferences about describers' attitudes and goals. *Journal of Experimental Social Psychology*, *42*, 500–508.

Edwards, D., & Potter, J. (1993). Language and causation: A discursive action model of description and attribution. *Psychological Review*, *100*, 23–41.

Fiedler, K. (2007). Frontiers of research on social communication: Introduction and overview. In K. Fiedler (Ed.), *Social communication* (pp. 1–24). New York: Psychology Press.

Fiedler, K., Armbruster, T., Nickel, S., Walther, E., & Asbeck, J. (1996). Constructive biases in social judgment: Experiments on the self-verification of question contents. *Journal of Personality and Social Psychology*, *71*, 861–873.

Fiedler, K., & Schenck, W. (2001). Spontaneous inferences from pictorially presented behaviors. *Personality and Social Psychology Bulletin*, *27*, 1533–1546.

Fiedler, K., Schenck, W., Watling, M., & Menges, J. (2005). Priming trait inferences through pictures and moving pictures: The impact of open and closed mindsets. *Journal of Personality and Social Psychology*, *88*, 229–244.

Fiedler, K., Semin, G.R., & Koppetsch, C. (1991). Language use and attributional biases in close personal relationships. *Personality and Social Psychology Bulletin*, *17*, 147–156.

Fiedler, K., Walther, E., Armbruster, T., Fay, D., & Naumann, U. (1996). Do you really know what you have seen? Intrusion errors and presuppositions effects on constructive memory. *Journal of Experimental Social Psychology*, *32*, 484–511.

Furth, H.G. (1966). *Thinking without language: Psychological implications of deafness*. New York: Free Press.

Gelman, S.A., & Heyman, G.D. (1999). Carrot-eaters and creature-believers: The effects of lexicalization on children's inferences about social categories. *Psychological Science*, *10*, 489–493.

Gigerenzer, G. (2004). Fast and frugal heuristics: The tools of bounded rationality. In D.J. Koehler & N. Harvey (Eds.), *Blackwell handbook of judgment and decision making* (pp. 62–88). Malden, MA: Blackwell Publishing.

Giles, H, Coupland, J., & Coupland, N. (Eds.). (1991). *Contexts of accommodation: developments in applied sociolinguistics*. Cambridge, United Kingdom: Cambridge University Press.

Gleitman, L., & Papafragou, A. (2005). Language and thought. In K.J. Holyoak & R.G. Morrison (Eds.), *The Cambridge handbook of thinking and reasoning* (pp. 633–661). New York: Cambridge University Press.

Graesser, A.C., Lu, S., & Jackson, G.T. (2004). AutoTutor: A tutor with dialogue in natural language. *Behavior Research Methods, Instruments & Computers*, *36*, 180–192.

Graumann, D.F. (1992). Speaking and understanding from viewpoints: Studies in perspectivity. In G.R. Semin & K. Fiedler (Eds.), *Language, interaction and social cognition* (pp. 237–255). London: Sage.

Grice, H.P. (1975). Logic and conversation. In P. Cole & J.L. Morgan (Eds.), *Syntax and semantics 3: Speech acts* (pp. 41–58). New York: Academic Press.

Hamilton, M.C. (1991). Masculine bias in the attribution of personhood: People = Male, Male = People. *Psychology of Women Quarterly*, *15*, 393–402.

Harasty, A.S. (1997). The interpersonal nature of social stereotypes: Differential discussion patterns about in-groups and out-groups. *Personality and Social Psychology Bulletin*, *23*, 270–284.

Heider, E. (1972). The structure of the color space in naming and memory for two languages. *Cognitive Psychology*, *3*, 337–354.

Hertel, G., & Fiedler, K. (1993). Affective and cognitive influences in a social dilemma game. *European Journal of Social Psychology*, *24*, 131–145.

Higgins, E.T. (1981). The communication game: Implications for social cognition and communication. In E.T. Higgins, C.P. Herman, & M.P. Zanna (Eds.), *Social cognition* (pp. 343–392). Hillsdale, NJ: Erlbaum.

Hilton, D.J. (1995). Logic and language in causal explanation. In D. Sperber, D. Premack, & A.J. Premack (Eds.), *Causal cognition: A multidisciplinary debate* (pp. 495–529). New York: Clarendon Press/Oxford University Press.

Holtgraves, T.M. (2002). *Language as social action*. Mahwah, NJ: Erlbaum.

Hörmann, H. (1976). *Meinen und Verstehen* [Meaning and understanding]. Frankfurt, Germany: Suhrkamp.

Hübscher, A. (Ed.). (1966). *Arthur Schopenhauer: Der handschriftliche Nachlass* [Arthur Schopenhauer: The hand-written literary remains]. Frankfurt, Germany: Kramer.

Hunt, E., & Agnoli, F. (1991). The Whorfian hypothesis: A cognitive psychological perspective. *Psychological Review*, *98*, 377–389.

Kashima, Y. (2000). Maintaining cultural stereotypes in the serial reproduction of narratives. *Personality and Social Psychology Bulletin*, *25*, 594–604.

Kashima, Y., Kashima, E.S., & Kim, U. (2006). Describing the social world: How is a person, a group, and a relationship described in the East and the West? *Journal of Experimental Social Psychology*, *42*, 388–396.

Kay, P. (2006). Language, thought and color: Recent developments. *Trends in Cognitive Psychology*, *10*, 51–54.

Krauss, R.M., & Fussell, S.R. (1996). Social psychological models of interpersonal communication. In E.T. Higgins & A.W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 655–701). New York: Guilford Press.

Lenneberg, E.H. (1967). *Biological foundations of language*. New York: Wiley.

Loftus, E.F. (1975). Leading questions and the eyewitness report. *Cognitive Psychology*, *7*, 560–572.

Maass, A. (1999). Linguistic intergroup bias: Stereotype perpetuation through language. In M.P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 31, pp. 79–121). San Diego, CA: Academic Press.

Maass, A., & Arcuri, L. (1996). Language and stereotyping. In N. Macrae, M. Hewstone, & C. Stangor (Eds.), *The foundations of stereotypes and stereotyping* (pp. 193–226).

Markman, A.B., & Ross, B.H. (2003). Category use and category learning. *Psychological Bulletin*, *129*, 592–613.

Marlatt, G.A. (1972). Task structure and the experimental modification of verbal behavior. *Psychological Bulletin*, *78*, 335–350.

Meadow, K. (1980). *Deafness and child development*. Berkeley: University of California Press.

Myers, D. (2003). *Psychology* (3rd ed.). New York: Worth Publishing.

Pennebaker, J.W., & King, L.A. (1999). Linguistic styles: Language use as an individual difference. *Journal of Personality & Social Psychology*, *77*, 1296–1312.

Pennebaker, J.W., Mehl, M.R., & Niederhoffer, K. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual Review of Psychology*, *54*, 547–577.

Piaget, J. (1958). *The child's construction of reality*. London: Routledge & Kegan Paul.

Rips, L.J. (1998). Reasoning and conversation. *Psychological Review*, *105*, 411–441.

Rosch, E. (1976). Basic objects in natural categories. *Cognitive Psychology*, *8*, 382–439.

Sapir, E. (1944). Grading: A study in semantics. *Philosophy of Science*, *11*, 93–116.

Schmid, J., & Fiedler, K. (1998). The backbone of closing speeches: The impact of prosecution versus defense language on juridical attributions. *Journal of Applied Social Psychology*, *28*, 1140–1172.

Schober, M. (2007). Epilogue: Language at the heart of social psychology. In K. Fiedler (Ed.), *Social communication* (pp. 435–440). New York: Psychology Press.

Schwarz, N. (1994). Judgment in a social context: Biases, shortcomings, and the logic of conversation. In M. Zanna (Ed.), *Advances in experimental social psychology* (pp. 123–162). San Diego: Academic Press.

Schwarz, N., & Bless, H. (1992). Constructing reality and its alternatives: An inclusion/exclusion model of assimilation and contrast effects in social judgment. In L.L. Martin & A. Tesser. *The construction of social judgment* (pp. 217–245). Hillsdale, NJ: Erlbaum.

Searle, J.R. (1969). *Speech acts*. Cambridge, United Kingdom: Cambridge University Press.

Searle, J.R. (1990). A classification of illocutionary acts. In D. Carbaugh (Ed.), *Cultural communication and intercultural contact* (pp. 349–372). Hilsdale, NJ: Erlbaum.

Seifert, L.S. (1997). Activating representations in semantic memory: Different benefits for pictures and words. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *23*, 1106–1121.

Semin, G.R. (2007). The regulation and distance. In K. Fiedler (Ed.), *Social communication* (pp. 389–408). New York: Psychology Press.

Semin, G.R., & Fiedler, K. (1988). The cognitive functions of linguistic categories in describing persons: Social cognition and language. *Journal of Personality and Social Psychology*, *54*, 558–568.

Semin, G.R., & Fiedler, K. (1991). The linguistic category model, its bases, applications, and range. In W. Stroebe & M. Hewstone (Eds.), *European review of social psychology* (Vol. 2, pp. 1–30). Chichester, United Kingdom: Wiley.

Semin, G.R., Higgins, T., de Montes, L.G., Estourget, Y., & Valencia, J.F. (2005). Linguistic signatures of regulatory focus: How abstraction fits promotion more than prevention. *Journal of Personality and Social Psychology*, *89*, 36–45.

Simon, H.A. (1982). *Models of bounded similarity*. Cambridge, MA: MIT Press.

Skinner, B.F. (1957). *Verbal behavior*. New York: Appleton Century Crofts.

Slatcher, R.B., & Pennebaker, J. (2006). How do I love thee? Let me count the works. *Psychological Science*, *17*, 660–664.

Slobin, D. (1996). From "thought to language" to "thinking for speaking." In J.J. Gumperz & S.C. Levinson (Eds.), *Rethinking linguistic relativity* (pp. 70–96). Cambridge, United Kingdom: Cambridge University Press.

Smeesters, D., Warlop, L., Van Avermaet, E., Corneille, O., & Yzerbyt, V. (2003). Do not prime hawks with doves: The interplay of construct activation and consistency of social value orientation on cooperative behavior. *Journal of Personality and Social Psychology*, *84*, 972–987.

Smith, E., & Mackie, D.M. (2000). *Social psychology* (2nd ed.). Philadelphia, PA: Psychology Press.

Smith, P.K., & Trope, Y. (2006). You focus on the forest when you're in charge of the trees: Power priming and abstract information processing. *Journal of Personality and Social Psychology*, *90*, 578–596.

Spelke, E. (1992). Origins of knowledge. *Psychological Review*, *99*, 605–632.

Sperber, D., & Wilson, D. (1995). *Relevance: Communication and cognition*. Oxford, United Kingdom: Blackwell.

Stahlberg, D., Braun, F., Irmen, L., & Sczesny, S. (2007). Representation of the sexes in language. In K. Fiedler (Ed.), *Social communication* (pp. 163–187). New York: Psychology Press.

Stapel, D.A., Koomen, W., & van der Pligt, J. (1996). The referents of trait inferences: The impact of trait concepts versus actor-trait links on subsequent judgments. *Journal of Personality and Social Psychology*, *70*, 437–450.

Steele, C.M. (1997). A threat in the air. *American Psychologist*, *52*, 613–629.

Steller, M., & Köhnken, G. (1989). Criteria-based statement analysis: Credibility assessment of children's statements in sexual abuse cases. In D.C. Raskin (Ed.), *Psychological methods for investigation and evidence* (pp. 217–245). New York: Springer.

Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review*, *110*, 403–421.

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, *211*, 453–458.

Vallacher, R.R., & Wegner, D.M. (1987). What do people think they're doing? Action identification and human behavior. *Psychological Review*, *94*, 3–15.

Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Wänke, M. (2007). What is said and what is meant: Conversational implicatures in natural conversations, research settings, media and advertising. In K. Fiedler (Ed.), *Social communication* (pp. 223–256). New York: Psychology Press.

Waxman, S. (1995). Words as invitations to form categories: Evidence from 12- to 13-month-old infants. *Cognitive Psychology*, *29*, 257–302.

Wegner, D.M., Wenzlaff, R., Kerker, R.M., & Beattie, A.E. (1981). Incrimination through innuendo: Can media questions become public answers. *Journal of Personality and Social Psychology*, *40*, 822–832.

Weldon, M.S., & Roediger, H.L. (1987). Altering retrieval demands reverses the picture-superiority effect. *Memory and Cognition*, *15*, 269–280.

Whorf, B.L. (1956). Science and linguistics. In J.B. Carroll (Ed.), *Language, thought and reality: Selected writings of Benjamin Lee Whorf* (pp. 207–219). Cambridge, MA: MIT Press.

Wigboldus, D.H.J., & Douglas, K. (2007). Language, stereotypes and intergroup relations. In K. Fiedler (Ed.), *Social communication* (pp. 79–106). New York: Psychology Press.

Wigboldus, D.H.J., Semin, G.R., & Spears, R. (2000). How do we communicate stereotypes? Linguistic bases and inferential consequences. *Journal of Personality and Social Psychology*, *78*, 5–18.

Wish, M., D'Andrade, R.G., & Goodnow, J.E. (1980). Dimensions of interpersonal communication: Correspondences between structures of speech acts and bipolar scales. *Journal of Personality and Social Psychology*, *39*, 848–860.

Wittgenstein, L. (1968). *Philosophical investigations*. Oxford, United Kingdom: Blackwell.