

Chapter 21

Figurative Language

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What defines “figurative language” as opposed to any other kind of speech? Consider the opening paragraphs of the following article from the *Good Times*, a Santa Cruz, California news and entertainment weekly (Nov 4–10, 2004, p.8). The article is titled “David vs. Goliath: Round One,” and describes the University of California, Santa Cruz’s controversial plan to double in physical size and increase enrollment by over 6000 students. Read through the following text and pick out those words and phrases that appear to express figurative meaning.

“Hidden in the shadows of a massive election year, tucked under the sheets of a war gone awry and a highway scuffle, another battle has been brewing.”

“When UC Santa Cruz released the first draft on its 15-year Long Range Development Plan (LRDP) last week, it signaled an ever-fattening girth up on the hill. While some businesses clapped their hands with glee, many locals went scrambling for belt-cinchers.”

“The LRDP calls for 21,000 students by the year 2020 – an increase of 6,000 over today’s enrollment The new enrollment estimate may have startled some residents, but as a whole it merely represents a new stage in a decades-long battle that has been fought between the city and the City on the Hill. While some students are boon to local businesses and city coffers, many residents complain students are overrunning the town—clogging the streets, jacking up rents and turning neighborhoods and the downtown into their own party playground”

“The bottom line is that the university can do what it wants to,” explains Emily Reilly, Santa Cruz City Council member and head of a committee developed to open up dialogue between “the campus and the city.”

These paragraphs are not atypical of the writing that appears in many newspapers, and most readers easily understand the text’s meaning, both at an individual sentence level, and its overall message. But picking out the words and phrases that express specific

figurative meanings is more difficult. For instance, the first line opens with a phrase “Hidden in the shadows of a massive election year” that seems to be figurative in the sense that election years cannot really cast shadows. Yet does it matter whether this phrase is termed “metaphoric” or ‘metonymic’ or perhaps even “ironic”? Similarly, the next phrase “tucked under the sheets of a war gone awry” also seems figurative given that wars are not really beds with sheets. But should these expressions be classified as idiomatic, metaphoric, or just more generally as figurative? The final phrase in the opening line, “another battle has been brewing,” seems less figurative, because many things besides liquids are frequently talked about as if they are “brewing” (e.g., arguments, ideas, emotions), enough so that “brewing” has a conventional meaning of “slowly developing” that can be applied to both physical and nonphysical entities. Some readers, nonetheless, claim that “another battle has been brewing” does have a figurative meaning, more specifically, a metaphorical reading, given that only liquid entities can, strictly speaking, be brewed.

Lastly, the article contained many other phrases that do not seem particularly figurative, but which nonetheless reflect a kind of nonliteral meaning, such as “UC Santa Cruz released the first draft” and “some businesses clapped their hands.” Both phrases are figurative in that universities and businesses do not literally release anything or clap their hands – only the people running the university and businesses can do so. Consider also the utterance opening the last paragraph; “The bottom line is that the university can do what it wants to.” Does “the bottom line” have literal or figurative meaning? Once more, if it is judged to be nonliteral, what kind of figurative meaning does it express?

Of course, during ordinary language use people are rarely aware of whether words and phrases have literal, figurative, or some other type of meaning – they simply try to understand the discourse given the present context and their own personal goals. This fact about ordinary language use raises the question of whether there is anything special about figurative language, such that it necessarily requires different cognitive processes to produce and understand compared to nonfigurative speech. A great deal of psycholinguistic research suggests that many forms of figurative language may be interpreted as readily as most nonfigurative discourse, although there are instances where some forms of figurative meaning may require a good deal of effort to understand and may produce special cognitive effects, or meanings (Gibbs, 1994).

Our concern in this chapter is to take a new look at the continuing debates in psycholinguistics over what is special about figurative language use. We suggest that figurative language does not constitute a unified class of linguistic materials that are understood by special figurative processes. Nonetheless, the indeterminate nature of many aspects of figurative meaning, a fact that is not properly acknowledged in many psycholinguistic studies, raises important issues about the possible trade-off between minimizing cognitive effort and maximizing cognitive effects during figurative language processing. We suggest ways that this trade-off can be empirically studied and form the basis for future psycholinguistic research on figurative language.

1. DISTINGUISHING FIGURATIVE FROM LITERAL LANGUAGE

One of the continuing difficulties with the psycholinguistics literature on figurative language understanding is that few scholars ever attempt to define the terms “literal” and “figurative.” A traditional assumption in many academic disciplines is that literal meaning is primary and the product of default language comprehension. Thus, in psycholinguistic terms, the human language processor is designed for the analysis of literal meanings. Nonliteral, indirect, and figurative meanings are secondary products, and dependent on some prior analysis of what words and expressions literally mean. This general theory implies that nonliteral meanings should always take more time to interpret than are literal meanings.

Psycholinguistic research over the past 40 years has struggled to create adequate accounts of sentence parsing and discourse processing. Although there has been significant progress in our understanding of different aspects of on-line sentence processing in regard to specific topics (e.g., the interaction of syntax and semantics in sentence parsing, reference assignment, ambiguity resolution, establishing coherence relations in text), there is no single agreed upon position as to what people ordinarily do as they encounter language word by word in speech and reading. Thus, there is really not a single position on literal meaning processing. This state of affairs highlights the absurdity of theories of figurative speech processing that are often based on unverified assumptions as to how so-called literal language is usually understood.

In fact, it is not clear what the operational definition of “literal” meaning is in most psycholinguistic experiments. These studies individually compare metaphoric vs. literal meaning, ironic vs. literal meaning, idiomatic vs. literal meaning, metonymic vs. literal meaning, and so on. But across the vast number of empirical studies that have compared “literal” and “figurative” meaning, the variety of forms for literal utterances is as great as are the differences between metaphors, metonymies, ironies, and so on. Yet scholars continue to assume that the literal meaning they examine empirically somehow is the same variable that other researchers investigate in their respective experiments.

A related tendency in research on figurative language has been to note the difficulty in making a principled distinction between literal and figurative language, or meanings, and to suggest, alternatively, that literal and figurative represent different ends of a continuum of meaning. This idea is seen as especially useful in recognizing that some instances of figurative language, such as novel, poetic metaphor seem more nonliteral than are highly conventionalized phrases which almost seem to express literal meanings (e.g., “kick the bucket” has “to die” as one of its literal meanings). Individual word meanings may also vary along this literal vs. figurative continuum.

But making these distinctions, even along some graded continuum makes little sense, especially if one is trying to squeeze all aspects of literal and figurative meanings onto a similar scale. Without some consistent idea of what constitutes the notions of “literal” and “figurative” meanings, there is no way of defining the extremes of this proposed continuum. For example, the most novel, poetic instances of metaphor and irony differ from each other in numerous ways (e.g., irony requires meta-representational inferences to be

understood in a way that metaphor does not – see Colston & Gibbs, 2002). Even novel metaphors may differ dramatically with some being spectacular instantiations of well-known conceptual metaphors (e.g., “Our marriage was a roller coaster ride through hell” related to *RELATIONSHIPS ARE JOURNEYS*) and others reflecting completely new “one-shot” mappings (e.g., “The soul is a rope that ties heaven and earth”). On the literal side of the continuum, different instances of so-called literal meanings may vary along numerous dimensions, depending in part on what aspects of literality are being emphasized (e.g., subject-matter literality, conventional literality, context-free literality, truth-conditional literality) (Gibbs, 1994). For these reasons, the well-intended move toward thinking about literal and figurative meanings as existing along some continuous dimension makes little sense. There is simply no single dimension along which all instances of literal and nonliteral meanings nicely align.

One general implication of the above is that there may not be a unified theory of figurative language use and understanding, precisely because the reasons for using different tropes, and the mental processes involved in understanding metaphor, metonymy, irony, and so on are quite different and cannot be subsumed under a single umbrella that is distinct for figurative language alone.

2. TRADITIONAL THEORIES AND EMPIRICAL RESULTS

Following the traditional belief about differences between literal and figurative language, psycholinguists have focused a great deal on examining the possibility that figurative language is understood after some sort of preliminary analysis of an expression’s literal meaning (Gibbs, 1994, 2002). The most famous, and now traditional, view of how listeners understand nonliteral meaning comes from H. Paul Grice’s theory of conversational implicature (Grice, 1989), often dubbed the “standard pragmatic” view. Grice argued that the inferences needed to understand nonliteral meaning are derived from certain general principles or maxims of conversation that participants in talk – exchange are mutually expected to observe (Grice, 1989). Among these are the expectations that speakers are to be informative, truthful, relevant, and clear in what they say. When an utterance appears to violate any of these maxims, as do many of the figurative expressions in the opening newspaper article, listeners, or readers, are expected to subsequently derive an appropriate “conversational implicature” about what the speaker intended to communicate in context given the assumption that he or she is trying to be cooperative.

The results of many psycholinguistic experiments have shown the standard pragmatic view to be incorrect as a psychological theory (see Gibbs, 1994; Glucksberg, 2001). Numerous reading-time and phrase classification studies demonstrate that listeners/readers can often understand the figurative interpretations of metaphors, irony/sarcasm, idioms, proverbs, and indirect speech acts without having to first analyze and reject their literal meanings when these expressions are seen in realistic social contexts. For instance, people can read figurative utterances (i.e., “You’re a fine friend” meaning “You’re a bad friend”) as quickly, sometimes even more quickly, as literal uses of the same expressions in different

contexts, or equivalent nonfigurative expressions. These experimental findings demonstrate that the traditional view of figurative language as *always* requiring additional cognitive effort to be understood has little psychological validity.

But the idea that people can use context to infer figurative meaning without a literal analysis of an expression has been criticized on various grounds. First, there has been misunderstanding of the claim that figurative language can be understood “directly.” This suggestion does not imply that people do not process the meanings, literal or otherwise, of the individual words in each expression. The work showing that people can process many instances of figurative language as quickly as they do nonfigurative speech only implies that a complete analysis of an expression need not be completed before any interpretation of its intended figurative meaning can begin (Gibbs, 2002).

Second, some studies have found evidence that people take longer to process figurative language than corresponding literal speech, exactly as would be predicted by the traditional view (Blank, 1988; Giora, 2002; Schwoebel, Dews, Winner, & Srinivas, 2000). Yet in at least some cases, the contexts used in these studies were relatively weak in supporting figurative meanings. For instance, remarks like “You’re just in time” took longer to read in ironic context (i.e., when someone was quite late) than in literal ones (Giora, Fein, & Schwartz, 1998), especially when the irony was unexpected. But in other studies, the context in which an ironic remark appeared set up an ironic situation so that the speaker’s utterance was easily understood as having ironic meaning and took no longer, and occasionally less time, to process than literal statements (Gibbs, 1986a, 1986b). Similar effects have been reported in regard to metaphor understanding where some contexts set up metaphorical conceptualizations of topics that make following metaphoric utterances easy to interpret (Gentner, Imai, & Boroditsky, 2002; Pfaff, Gibbs, & Johnson, 1997). People may still need to draw complex inferences when understanding some figurative statements, but part of these inferences can occur before one actually encounters a figurative utterance. Other studies show that familiar conventional instances of figurative language (e.g., “John kicked the bucket,” “A fine friend you are”) take less time to interpret than do novel figurative expressions (Giora et al., 1998; Temple & Honeck, 1997). Listeners may take longer to understand a novel expression because of the difficulty in integrating the figurative meaning with the context and not because listeners are first analyzing and then rejecting the expression’s literal meaning (Schraw, 1995; Shinjo & Myers, 1987). For these reasons, we simply should not infer that the literal meaning for an entire phrase or expression must have been analyzed simply because people take longer to read novel instances of figurative language than to process either familiar figurative expressions or equivalent literal statements (Brisard, Frisson, & Sandra, 2000). Bowdle and Gentner (2005) also caution that equating conventionality with directness of processing may be an oversimplification. The processing required to interpret novel figurative language depends on many factors, including grammatical form, context, and whether different instances are related to pre-existing figurative schemes of thought (Bowdle & Gentner, 2005; Gibbs, 1994), enough so that even novel expressions may require as little time to understand as do conventional figurative utterances.

Another body of research has suggested that on-line studies may be better indicators of literal meaning activation than are more global measures of utterance comprehension, such as reading time and phrase classification techniques (Brisard et al., 2000). These on-line studies usually examine the activation of literal and figurative meanings at different points during and at the end of figurative utterance comprehension. For instance, one research project examined comprehension of familiar and less familiar metaphorical expressions (Blasko & Connine, 1993). Participants in these experiments heard different sentences and made lexical decisions at various times to visually presented word strings. For instance, as participants heard the sentence "The belief that hard work is a ladder is common to this generation," they were visually presented a letter string immediately after hearing the word "ladder." The letter string visually presented was related to some aspect of the sentence's literal meaning (e.g., "rungs"), a letter string related to the sentence's metaphoric meaning (e.g., "advance"), or a control word unrelated to the sentence (e.g., "pastry"). The results revealed that participants were equally fast in responding to the literal and metaphorical targets, which were both faster than the latencies to the controls. This was true both when participants made their lexical decisions immediately after hearing the critical word (e.g., "ladder"), and when the same decisions were made 300 ms after hearing the critical word. However, when participants made these same types of lexical decisions to literal and metaphorical targets having heard less familiar expressions, such as "The thought that a good professor is an oasis was clung to by the entire class," only literal targets were primed immediately after hearing the critical word (e.g., "oasis"), while responses to the metaphorical targets were facilitated only 750 ms after the critical word.

But these studies have one important methodological flaw in their equating different aspects of meaning (word vs. phrasal) with response times to literal (word) and metaphoric (phrasal) targets. For example, in Blasko and Connine (1993) the literal target "rung" is a simple semantic associate of the word "ladder," while the metaphoric target "advance" only relates to the general meaning of the entire expression. This makes it difficult to conclude anything about the time-course under which literal meanings of an entire sentence are activated compared to figurative meanings of these expressions. Even if one conceives of literal meaning as only relating to individual word meaning, this study does not compare activation of literal word meanings with figurative word meanings. Moreover, the words used as literal and metaphoric targets do not seem to reflect very distinctive literal and figurative meanings. The literal target "rung," for instance, is related to the idea of advancing (i.e., the figurative target) given that climbing ladders, even literally speaking, is an instance of advancing along some physical path. We believe these problems plague a good deal of the studies using lexical priming techniques to examine figurative language processing.

A different issue with many studies is the assumption that the activation of a particular meaning (i.e., literal or idiomatic) reflects the output of entirely different linguistic processes. The possibility remains that activation of different kinds of meaning (i.e., literal or idiomatic) reflects different types of meaning accessed by a single linguistic process. The fact that psycholinguists label one kind of meaning as "literal" and another "figurative" does not necessarily indicate that different processes operate (i.e., a literal

processing mode and a idiomatic or figurative processing mode) to access these meanings (either in a serial or parallel manner). There are many types of figurative meaning, including metaphoric, idiomatic, metonymic, ironic, satirical, proverbial, hyperbolic, oxymoronic, and so on. Scholars often assume within the context of a single set of studies that there are two processes at work during figurative language understanding, such as literal vs. idiomatic, literal vs. metaphoric, or literal vs. ironic. Yet if there are numerous types of meaning, must there be dozens of types of linguistic processes all at work, or potentially at work, when language is understood? Psycholinguists have not addressed this question primarily because they focus too narrowly on only one kind of figurative meaning against a simple view of literal meaning.

A related type of study that examined the time-course for understanding literal and figurative interpretations of simple sentences used a signal, speed-accuracy trade-off procedure (McElree & Nordlie, 1999). Participants were presented strings of words, one at a time, at a rate that approximated fast reading (250 ms/word). The final word in each string produced a literal (e.g., “some tunnels are sewers”), a figurative (e.g., “some mouths are sewers”), or a nonsensical interpretation (e.g., “some cattle are sewers”). Participants judged whether each word string was meaningful when a tone appeared at varying times after the critical, last word. No differences were found in the comprehension speed for literal and figurative strings. McElree and Nordlie argued that the lack of time-course differences is inconsistent with the claim that figurative interpretations are computed after a literal meaning had been analyzed. In general, the time-course data presumably support the idea that literal and figurative interpretations are computed in parallel.

But we question whether the null results (e.g., no difference in processing literal and figurative sentences) obtained in these experiments necessarily provide evidence in favor of a parallel processing model. The activation of a particular meaning (i.e., literal or idiomatic) is assumed to reflect the output of entirely different linguistic processes. Once again, the possibility remains, however, that activation of different kinds of meaning (i.e., literal or idiomatic) may arise from a single linguistic process.

3. NEW MODELS AND FINDINGS

The continuing debates over the traditional view of figurative language understanding have led to the development of several alternative theories, specifically focused on the role of context in figurative language processing. These new models generally aim to describe the influence of context on figurative language processing at a more fine-grained level than the earlier proposals. Thus, the newer models suggest when and how context prompts figurative meanings during word-by-word linguistic processing. At the same time, these newer models attempt to offer general accounts that may apply to all aspects of figurative language, compared to most theories that aim to describe individual tropes (e.g., metaphor, irony, proverbs). Although these models recognize that some trope-specific types of processing may be necessary, they suggest that some obligatory linguistic processes operate with all types of figurative language.

Perhaps the most prominent of these new models is the “graded salience hypothesis” (Giora, 2002). This account specifically claims that context functions to constrain figurative meanings only after salient word or phrase meanings have already been accessed. Salient word or phrase meanings are not necessarily “literal” meanings. Instead, salient meanings reflect the most common, conventional use of a word or phrase. Unlike the standard pragmatic view, however, context may facilitate activation of figurative meanings before people analyze the semantic, or literal, meanings of the entire linguistic expression. For instance, processing familiar metaphors (e.g., “step on someone’s toes”) should activate both of their literal (e.g., foot) and metaphoric (e.g., offend) meanings, even when these metaphors are seen in appropriate discourse contexts. Processing unfamiliar metaphors (e.g., “Their bone density is not like ours”) may, on the other hand, only initially activate their literal meanings, as these are most salient.

Different empirical studies, ranging from reading-time to word-fragment completion experiments, support this general idea for how people interpret different kinds of figurative language, in addition to how jokes may be understood. For example, consider the findings of a set of studies looking at irony comprehension (Giora & Fein, 1999). These studies examined people’s understanding of familiar (e.g., “Very funny”) and less familiar (e.g., “Thanks for your help”) ironies in comparison to literal uses of the same expressions in appropriate contexts. Participants read stories ending with either literal or ironic remarks. After reading the final sentence, participants were presented with a letter string and had to quickly respond whether that string was a meaningful word. For instance, after reading the statement “Thanks for your help,” participants were presented with either a ironic test word (e.g., “angry”) or a literal test word (e.g., “useful”). These test words were presented either 150 or 1000 ms after participants read the final statements.

The results showed that when people read less familiar ironies they responded faster to the literal test words than to the ironic test words in the 150 ms condition, but there were no differences in the lexical decision times to the literal and ironic test words after 1000 ms. In contrast, the literal and ironic test words were responded to equally fast after both 150 and 1000 ms when people read familiar ironies. This pattern of data suggests that when people read familiar ironies both literal and ironic meanings are quickly accessed, but only literal meanings are initially activated when people read less familiar ironic statements. Although Giora and Fein (1999) favor a salience-first processing model, as opposed to the standard pragmatic account, their results support the idea that salient meanings, of perhaps both words and sentences, are always accessed first. In this way, the graded salience view is similar to modular views of linguistic processing in which context operates to narrow appropriate meaning after some initial context-independent word and phrase meanings have been activated.

One difficulty with the graded salience view is that is unclear what defines a word’s, or expression’s, salient meaning. Giora (2002) suggests, “The salient sense of a word, or an expression, is the one directly computable from the mental lexicon irrespective of inferences drawn on the basis of contextual information” (P. 18). Salience is a graded notion, and includes senses that are more frequent, conventional, or prototypical/stereotypical.

The best empirical method for assessing the salient meaning of any word is to use standardized norms such as word frequency and word familiarity, although these alone do not necessarily indicate which of several alternative senses of a word are most salient. Ordinary speakers can, however, be asked to judge the frequency or familiarity of alternative word senses to obtain a measure of salience. Giora (2002) also suggests other behavioral tasks may be employed to assess salient meanings such as asking people to write down the meanings of words, or phrases, that “came to mind first” (p. 22), or to provide speeded responses to probes related and unrelated to words placed in neutral contexts. In general, however, it is not clear that these different methods all lead to the same salient meaning for individual words and phrases, even for a single person.

A different problem with the graded salience view is that it posits automatic activation of both salient word and phrase meanings. The motivation for this facet of the proposal comes from the fact that the conventional meanings of certain phrases, such as “kick the bucket” (meaning “to die”), are automatically activated even when the context specifies a different interpretation (e.g., a dairy farmer striking his foot against a pail). Yet according to the graded salience hypothesis, the salient meanings of individual words should also be automatically activated regardless of context. Thus, the salient meaning of the word “kick” should be quickly accessed. But this salient word meaning differs from the putative salient meaning of the entire phrase (e.g., “to die”). It is unclear how this conflict is resolved or whether context comes into play to determine contextually appropriate word meanings before conventionalized phrasal meanings are accessed.

A related recent theory of figurative language processing claims that the language processor initially accesses an interpretation that is compatible with both a word’s literal and figurative meanings (Frisson & Pickering, 2001). Consider the verb “disarmed” in “Mrs. Graham is quite certain that they disarmed about every critic who was opposed to spending more money on art.” The “underspecification model” assumes, for example, that the initial meaning recovered when reading the verb “disarmed” in any context is underspecified as to whether it refers to removing literal or figurative arms. Over time, however, the language processor uses context to hone in on the word’s appropriate meaning, where the honing in process is faster when the preceding context is strong and slower when the preceding context is neutral.

Support for the underspecification model comes from several eye-movement studies. In one study, Frisson and Pickering (2001) examined people’s processing of ambiguous verbs, such as “disarmed” in the above sentence. The eye-movement data showed that the processing difficulty with the subordinate sense of “disarmed,” relative to when the word was used in a literal, dominant sense (e.g., “After the capture of the village, we disarmed about every rebel and sent them to prison”), did not emerge until *after* the critical verb was read. Thus, context reduces processing difficulty, but the difference did not emerge until much after the verb was seen. Frisson and Pickering suggest that people did not initially access either a specific sense or several senses for an ambiguous verb. Instead, readers initially recovered a general, underspecified meaning for the verb and then created a further concrete instantiation of its meaning later on. According to the underspecification model,

then, context does not operate to judge between different word meanings, but functions to change an underspecified, or highly general meaning, into a specific interpretation.

A different set of studies in support of underspecification investigated processing of sentences containing place-for-institution metonymies such as “That blasphemous woman had to answer to the convent” by measuring participants’ eye-movements as they read (Frisson & Pickering, 1999). Results showed that people were as fast to understand these familiar metonymies as to read literal sentences, and that processing unfamiliar metaphors took more time than did reading compatible literal sentences. Thus, figurative language processing need not be delayed for familiar metonymies. A second study showed similar findings for familiar place-for-event metonymies such as “A lot of Americans protested during Vietnam,” and unfamiliar ones such as “A lot of Americans protested during Finland.” Frisson and Pickering argued that the overall findings do not support either a literal-first or figurative-first model, but fit best with a model where a single underspecified representation that is compatible with both literal and figurative (e.g., metonymic) senses. Eventually, context comes in to hone the very general interpretation into a contextually appropriate meaning.

The underspecification model does not assume that different linguistic processes must exist for different meaning products (i.e., literal vs. figurative uses of words) to arise during on-line linguistic understanding. In this way, the putative distinction between literal and figurative senses of a word is irrelevant, at least in terms of ordinary processing. However, similar to the graded salience model, the underspecification model embraces a modular view of linguistic processing, at least in the sense that lexical access is encapsulated from contextual effects. But similar to the graded salience view, the underspecification model suffers from the problem of not being able to specify what constitutes the initial, underspecified meaning that is accessed when a word is first encountered. Many linguists reject the underspecification view precisely because they have failed to discover senses that are rich enough to capture the wide range of meanings (up to 100 for some polysemous words) many words possess (Gibbs, 1994). More generally, both the graded salience and underspecification views face the challenge of demonstrating consistent bottom-up activation of context-free word meanings even in the presence of strong supporting context.

Finally, a different model of figurative language understanding embraces the notion of constraint satisfaction, an idea that has gained much support in psycholinguistics and cognitive science (Katz & Ferratti, 2001; Katz, 2005). When people comprehend a text, or a figurative utterance, they must construct an interpretation that fits the available information (including context) better than alternative interpretations. The best interpretation is one that offers the most coherent account of what people are communicating, which includes meanings that best fits with certain other information and excludes meanings that do not fit this other information. Under this view, understanding a figurative utterance requires people to consider different linguistic and nonlinguistic information that best fits together to make sense of what a speaker or writer is saying. Constraint satisfaction models are computationally efficient, and perhaps psychologically plausible, ways of showing how different information is considered and integrated in everyday cognition.

Katz and Ferretti (2001) argue that a “constraint satisfaction model” provides the best explanation for experimental data on proverb understanding. They employed a self-paced moving window paradigm to show that context affects people’s immediate reading of familiar (e.g., “Lightning never strikes the same place twice”) and unfamiliar proverbs (e.g., “Straight trees have crooked roots”) that have both well-formed literal and figurative meanings. Familiar proverbs were understood more easily than unfamiliar expressions, and the speed-up in processing for familiar proverbs occurred as soon as the second word of the expression was read. But the first words of unfamiliar proverbs were read more quickly in contexts supporting their figurative, rather than literal, meanings. Yet the analysis of an unfamiliar proverb’s figurative meaning was not always complete when the last word was read.

These findings support a constraint satisfaction model by positing how different sources of information (i.e., syntactic, lexical, conceptual) compete for activation over time in parallel. Constraints interact to provide probabilistic evidence in support of various alternatives with the competition ending when one alternative fits best. For example, when reading an unfamiliar proverb, people immediately focus on a literal interpretation because there is less competition from other sources of information supporting a figurative meaning. Similarly, familiar proverbs are easier to process than unfamiliar expressions because there is more information available from the context and the words in familiar proverbs to support a figurative interpretation.

Another test of the constraint satisfaction view examined people’s immediate understanding of expressions like “Children are precious gems” as having metaphoric (children are valuable) or ironic (children are burdens) meaning (Pexman, Ferretti, & Katz, 2000). Several sources of information could induce either the metaphoric or ironic meaning, including the occupation of the speaker, whether the statement was counterfactual to information in the previous discourse, and the familiarity of the expression. Results from an on-line reading task (i.e., moving window) demonstrated that the “A is B” statements were initially read as metaphors, but that the speaker’s occupation and counterfactuality of the statement given the previous context play an early role in processing, thus slowing processing at the space following the statement or by the time the first word of the next statement is read. Furthermore, knowing that a speaker is often associated with irony slows down reading of the first word in the following statement if the context leads one to expect a metaphoric reading, yet acts immediately to speed up processing right after the target statement if the context induces an ironic meaning. The complex interaction between the three sources of information is consistent with the idea that understanding whether an expression is meant metaphorically or ironically depends, similar to other aspects of language, on multiple sources of information being examined and interpreted continuously during on-line reading (McRae, Spivey-Knowlton, & Tannenhaus, 1998).

Related findings using a moving window paradigm showed that context modulated relative processing of literal and ironic statements (Ivanko & Pexman, 2003). When context induced neither a literal or ironic bias, reading times for literal and ironic utterances were roughly equivalent, with faster reading times more locally for the fifth word of the target statements. When the context led to a bias for literal criticism, ironic remarks were

read more slowly than literal ones. Once again, there are complex interactions between the type of context and the speed with which figurative utterances are understood, such that literal readings of utterances, or salient ones, are not obligatory in all cases. This pattern is most consistent with probabilistic, constrain-satisfaction models of figurative use, and is inconsistent with modular approaches to linguistic processing.

4. INDETERMINACY OF FIGURATIVE MEANING AND PROCESSING

The important emphasis on on-line-processing figurative language in experimental psycholinguistics often ignores exactly what people have understood when they seem to have successfully comprehended a particular figurative expression. For the most part, psycholinguists and others tacitly assume that any figurative statement can be paraphrased by a linguistic expression that states in literal terms what people must have attempted to communicate when speaking figuratively (e.g., “blow your stack” means “to get very angry”). The reduction of figurative meaning to simple, short linguistic paraphrases in psycholinguistics is reasonable in the context of designing experimental studies that, for instance, contrast figurative language processing with nonfigurative, or sometimes literal, understanding.

However, the belief that figurative expressions can be readily paraphrased misconstrues the complexities of what many figurative expressions actually communicate in real-life contexts. Studies show, for example, that when people read “John blew his stack,” they readily infer information about the cause, intentionality, and manner by which John got angry, inferences they did not draw when they read literal paraphrases of similar length such as “John got very angry” (Gibbs, 1992). Furthermore, reading idioms in contexts that violate any of these inferences slows down processing for these phrases, but not so for literal paraphrases (Gibbs, Bogdonovich, Sykes, & Barr, 1997). These empirical findings strongly suggest that even highly conventional metaphors, which are often incorrectly assumed to be dead metaphors or long lexical items, convey rich conceptual and pragmatic information, more so than do so-called literal paraphrases.

This conclusion about the richness of figurative meaning comes as no surprise to many interdisciplinary metaphor scholars who have long argued that metaphor, and many other tropes, are “pregnant with meaning.” In fact, a large body of research has discovered that different forms of figurative language communicate a wide variety of propositional, social, and affective meanings, or pragmatic effects. Verbal irony, for instance (e.g., saying “This is fantastic” when losing one’s keys), has been shown to both enhance and diminish the condemnation expressed by an individual relative to speaking more directly (Colston, 1997). By saying something positive about a negative situation, the situation is made to look worse relative to saying something directly negative (e.g., “This is just awful”), which enhances the speaker’s condemnation. Verbal irony, along with hyperbole (e.g., “He was so hungry he ate the table with his meal”), and understatement (e.g., “This might require a bit of work” about a huge task), also express predictably variable degrees of humor, expectation/reality deviance demonstration and speaker protection (Colston & O’Brien, 2000a, 2000b; Colston, 2002). Hyperbole expresses surprise either through

increasing hearers' attention toward expectation/reality discrepancies via the distinctiveness of the inflation, or by an audacity demonstration process whereby a speaker breaks with conversational congruity to make a point (Colston, *in press*; Colston & Keller, 1998).

One form of ironic discourse, called rebuttal or ironic analogy, performs the dual pragmatic functions of argument and social attack (Whaley & Holloway, 1996; Colston & Gibbs, 1998; Colston, 1999, 2000a). So if a speaker says, for instance, "calling Chili's just another restaurant is like saying the Great Wall of China is just a fence," she causes the hearer to map the ironic structure of the base, "saying the Great Wall of China is just a fence", onto the target, "calling Chili's just another restaurant." This acts to argue against the proposition in the target, as well as to belittle the proponent(s) of that proposition.

Many forms of figurative language also bolster persuasiveness and the social standing of speakers (Holtgraves, 2001; Sopory & Dillard, 2002). A "truth externalization" process is particularly well performed by proverbs, metaphors and some idioms, for instance. Thus, a speaker who claims, "It is best to let sleeping dogs lie" relies on a cultural norm as expressed in the proverb to convey the best course of action in a potentially difficult situation (Gibbs, 2001; Curco, 2005). By using language that leverages a significant degree of meaning outside of a proposition directly proclaimed by a speaker, the speaker places the "truth" of the intended message outside of him/herself. This lending of objectivity can make the meaning seem stronger. A speaker's demonstrated skill in shepherding the intended message of a figurative utterance can also increase others' admiration, which can in turn additionally enhance the message. These and other similar processes can contribute to a more general "mastery demonstration" function where a figurative speaker can gain in their social standing by using figurative language (Gibbs & Izett, 2005). Indeed, many people have a positive subjective experience when they comprehend figurative language (for a review, see Colston, *in press*). Such a positive feeling can reflect well on a speaker and lead to many sociocognitive and persuasive effects (e.g., liking the speaker more, paying greater attention to what the speaker says subsequently, more strongly adopting the speaker's viewpoint, etc.) that can cascade and contribute to other of the effects discussed here.

Finally, research shows that some forms of figurative language evoke different kinds of emotional reactions. Thus, hearing ironic statements leads listeners to feel more intense emotions than when literal speech is heard (Leggitt & Gibbs, 2000). Sarcasm, rhetorical questions, and overstatements all evoke relatively negative emotions, compared to understatement and satire. People also tend to speak metaphorically more so when feeling intense emotions, something that listeners readily pick up on in many conversations and attribute affective meanings to speakers' messages (Gibbs, Leggitt, & Turner, 2003). One large study demonstrated, more generally, that different types of figurative language can fulfill as many as 20 different discourse goals, including many of the social and affective effects described here (Roberts & Kreuz, 1994).

Not surprisingly, inferring pragmatic effects may come at a processing cost. But what determines the stopping point for the various indeterminate aspects of figurative

meanings? One well-known proposal from linguistic pragmatics suggests that there is a trade-off between the amount of cognitive effort put into linguistic understanding and the cognitive effects, or meanings, that are inferred (Sperber & Wilson, 1995), a theory that applies to all aspects of linguistic communication, not just figurative language processing. Relevance theory generally claims, again, that interpretation of figurative language occurs in the same way as with any other nonfigurative utterance. A listener stops processing when he thinks that every further implication he could get is not worth the effort it takes to obtain these additional cognitive effects. Sperber and Wilson (1995) claim that newly presented information is relevant in a context only when it achieves cognitive effects in that context, and the greater the cognitive effects, the greater the relevance. They specifically define a notion of “optimal relevance” that outlines what listeners look for in terms of cognitive effort and effect: an utterance, on a given interpretation, is optimally relevant if and only if (a) it achieves enough effects to be worth the listener’s attention, and (b) it puts the listeners to no gratuitous effort in achieving these effects.

Consider the metaphorical utterance “My surgeon is a butcher.” Listeners generally have immediate access to stereotypical knowledge about surgeons and would normally infer that the speaker here means, “My surgeon is crude and sloppy in his practice.” Speaking loosely like this requires that speakers have in mind some further idea or cognitive effect beyond the single thought “My surgeon is crude and sloppy in his practice.” For instance, the speaker may wish to convey an image of surgeons that is beyond most people’s experience and will expect the listener to make some effort toward exploring a wide range of cognitive effects (e.g., having to do with the nature of surgeons, their imprecision, their insensitivity toward dealing with human beings, and perhaps their appearance and demeanor). These implications are relatively weak, but they best resemble the speaker’s thought about his surgeon. Understanding this range of weak implications may require additional cognitive effort on the part of the listener, but this is offset, according to the principle of relevance, by extra effects not achievable by saying directly “My surgeon is crude and sloppy in his practice.” In general, metaphorical utterances, like all figurative and indirect language, are simply one means of optimizing relevance in verbal communication.

Very few psycholinguistic studies have explicitly explored the trade-off between cognitive effort and effects in figurative language processing. One study suggests that there must be extra processing associated with understanding a well-chosen metaphor (Noveck, Bianco, & Castry, 2001). Yet it is not clear how to operationalize the idea of individual metaphorical, or figurative, meanings within the “more cognitive processing = more cognitive effects” hypothesis. Consider the stock metaphor “Some jobs are jails.” There are a variety of meanings that people may understand when reading this expression, including that some jobs are poorly paid, confining, stifling, unpleasant, demoralizing and so on. But how does one actually distinguish between these impressions to clearly establish which meanings are independent in order to test the idea that more cognitive processing equals more cognitive effects? This problem is complicated by the possibility, as noted above, that listeners may draw a range of pragmatic effects, or

weak implicatures, from figurative utterances. There are also cases where people can put a good deal of cognitive effort into understanding a speaker's utterance without gaining appropriate cognitive effects. For example, where people assume that the producer of a metaphor was a famous poet, they put in a good deal more effort to try to understand anomalous phrases, such as "A scalpel is like a horseshoe," than when told that these phrases were randomly generated by a computer program (Gibbs, Kushner, & Mills, 1990). Finally, people may also infer complex figurative meanings with little cognitive effort, or at least less time than is needed to comprehend corresponding nonfigurative expressions, as shown by Gibbs (1992).

In general, it is impossible to predict the processing effort needed to comprehend figurative utterances given the number, or types of cognitive effects than may arise from interpreting these statements. It may be the case, as Noveck et al. (2001) argue, that some figurative expressions, such as certain novel metaphors, may take longer to process than synonymous nonfigurative expressions, if these are encountered in neutral contexts, precisely because of the additional cognitive effects they communicate. But proving this point will require an independent measure of the cognitive effects that utterances convey. We see this as one of the great challenges for figurative language scholars, as well as for all psycholinguists.

5. EXAMINING THE COGNITIVE EFFORT AND EFFECTS TRADE-OFF

Despite some of the difficult questions regarding the nature of cognitive effects, we believe that the time is ripe for psycholinguistic research on the trade-off between effort and effects during figurative language processing. Our claim here is that present debates over whether figurative language is understood directly or indirectly should evolve into a more systematic examination of the complex interactions between many cognitive and linguistic factors associated with any psycholinguistic act. One way to begin this type of exploration is to adopt an old tetrahedral model of cognitive processes (Jenkins, 1979), which suggests that several factors must shape processing, including (1) the participants (e.g., their abilities, interests, beliefs, motivations, goals), (2) the understanding task (e.g., understanding to solve a problem, make a decision, remember something, be emotionally affected by something said), (3) the criterial task (e.g., different measures of cognitive processes and product), and (4) the materials (e.g., type of language, modality of presentation). Fortunately, there is a fair amount of research relevant to each of these factors in regard to figurative language use, even if at present these findings have not been placed within a larger theoretical framework.

5.1. Participants

There are a variety of participant variables that can influence processing fluency for figurative language. For example, if a speaker is known to be the type of person who regularly uses verbal irony, based on occupation or gender for instance, and if the situation has been set up to likely create ironically intended utterances, then ironic utterances

will be comprehended relatively fluently, as several studies have demonstrated (Katz & Pexman, 1997; Pexman & Olineck, 2002; Katz, Piasecka, & Toplack, 2001). Gender is another important variable, given research showing that men tend to use figurative language in describing other people's emotions, while women use figurative speech more in talking about their own feelings (e.g., "I would feel like my heart would just jump out of my chest ...") (Link & Kreuz, 2005). The relationship between speakers (e.g., close friends vs. strangers), their social status, occupation, geographic origin, religious or political background, ethnicity, and personalities, show effects on comprehension of a diverse range of figurative forms, including metaphor, irony, metonymy, proverbs, idioms, indirect requests, analogies, litotes, and metaphorical gestures (Colston & Katz, 2005). To note just a couple of examples, consider the normal ironic banter that often accompanies groups of friends (Gibbs, 2000; Pexman & Zvaigzne, 2004) or the quintessential British form of understatement (e.g., "He clearly has issues" in reference to a suicidal character).

Another emerging characteristic of participants that has been shown to influence figurative language processing is their past and current embodied experiences (Gibbs, 2005). For example, research shows that people's previous bodily experiences of hunger partly predicts their use and understanding of metaphorical expressions about difference forms of desire, as seen in statements like "I hunger for fame" or "I craved her affection" (Gibbs, Lima, & Francuzo, 2004). In another series of studies on metaphorical talk about time, students waiting in line at a café were given the statement "Next Wednesday's meeting has been moved forward two days" and then asked "What day is the meeting that has been rescheduled?" (Boroditsky & Ramscar, 2002). Students who were farther along in the line (i.e., who had thus very recently experienced more forward spatial motion) were more likely to say that the meeting had been moved to Friday. Similarly, people riding a train were presented the same ambiguous statement and question about the rescheduled meeting. Passengers who were at the end of their journeys reported that the meeting was moved to Friday significantly more than did people in the middle of their journeys. Although both groups of passengers were experiencing the same physical experience of sitting in a moving train, they thought differently about their journey and consequently responded differently to the rescheduled meeting question. These results suggest how ongoing sensorimotor experience has an influence on people's comprehension of metaphorical statements about time.

5.2. Orienting Task

In many communicative settings, people are not given, nor are they following any explicit directions or rules that might orient them to process or comprehend what is said or written in a particular way. Exceptions to this would be in those occasional situations where orienting rules or directions have been given or are being followed, (e.g., a law clerk is told to scan through court transcripts looking for when a defendant said...). People would, though, likely adhere to implicit rules that might affect figurative language comprehension and processing (c.f., eavesdropping vs. listening to poetry).

For example, asking people to solve problems with metaphoric language, simply understand metaphors, recall metaphors, or produce metaphor may all produce varying empirical findings in regard to the relative primacy of metaphor to nonmetaphoric language. Thus, research shows that people's decisions about common dilemmas are strongly shaped by the presence or absence of metaphor (Robins & Mayer, 2000). When a metaphor is critical to frame, or understand, a problem, people readily use that information in making decisions about a common dilemma. But when metaphor is not necessary to understanding a dilemma, the presence of such language adds ambiguity to people's decision-making process. On the other hand, studies also show that the persuasiveness of metaphor depends more on the way such language resonates with a person's own preferences than it does with whether the metaphor is needed to frame a topic (Ottati, Rhoads, & Graesser, 1999).

In a different context, although people clearly understand familiar metaphors faster than they do unfamiliar ones, they recall these two types equally well (Blasko & Brihl, 1997). Finally, asking people to verbally describe the conceptual connection between two word often yields metaphoric descriptions, which take longer to produce than do nonmetaphoric descriptions (Flor & Hadar, 2005), a result that is contrary to the typical pattern in reading time studies showing that metaphors do not generally take more time to process than nonmetaphorical statements. Once again, the orienting task given to experimental participants can have an important effect on whether figurative language is seen as primary compared to nonfigurative speech.

At the same time, orienting tasks can powerfully adjust the fulcrum location upon which language comprehension tips toward the more figurative or less figurative. For instance, when operating under the criterion of achieving genuine or deep understanding, listeners/readers can use figurative comprehension to fertilize rich interpretation. Many heady, moving experiences of language comprehension are evidence of this (e.g., hearing powerful speeches, emotional song lyrics or poetry, highly apt metaphors or other figures). Conversely, when listening/reading for less cooperative and indeed, combative purposes (e.g., as in arguments, debates), people will often scramble for the golden fleece of a "literal meaning," to serve those purposes (e.g., for preparing rebuttals, to find weaknesses or attack points in others' comments). One study for instance found evidence for such a link between criterial task and degree of "literal mindedness." When people were placed in high-stress situations, as are often the case in arguments, disagreements, debates, etc., their ability to comprehend figurative language subtly broke down (Colston, 2005b). Barr and Keysar (2005) also argue that people tend to interpret figurative expressions egocentrically, and thus do not take common ground information immediately into account, when they are under time pressure.

5.3. Criterial Task

The best method for assessing comprehension or interpretation of figurative language has always been a significant source of concern in psycholinguistics. Tasks that have used off-line measures (e.g., rating studies, judgments of metaphor aptness, memory tasks) as

indicators of figurative language comprehension have often been criticized for their inability to distinguish processes that might take place during reading or hearing in the comprehension process vs. those that might occur later in the processing stream. Reading time measures were long considered superior because they could use overall reading time as a more precise, and presumably outside of subjective control, indicator of on-line processing – relying upon the assumption that, all else being equal, longer reading times indicated greater processing. But reading time studies also differ in their specific task requirements. Some experiments ask participants to simply read individual sentences in a story, and push a button as soon as the expression on the computer screen has been understood. Yet other studies ask people to sometimes read an expression, such as a figurative remark, and make a speeded judgment as to whether it fits within the preceding story context. As it turns out, judgments of appropriateness or relatedness often result in longer comprehension times for figurative expressions compared to literal ones (Schwobel et al., 2001; Temple & Honeck, 1997). But figurative and literal expressions can be read equally fast when only simple comprehension time is measured (Gibbs, 2002). Thus, the precise task used leads to different results with very different theoretical implications.

More recently, more sophisticated mechanisms have enabled word-to-word reading time measures with moving scanning windows that readers control, and eye-tracking measures that remove unnatural reader responses altogether from the reading/measurement. This progression in research methodologies has been viewed as an improvement in our ability to tap into figurative language processing, and undoubtedly it has afforded greater precision. But often overlooked in this perspective is the potentially remaining disconnect between even the very precise eye-movement measures and what one genuinely and subjectively experiences as comprehension, as if that is ever even a delineated, all-or-none accomplishment, universal across all kinds of language, interlocutor types, goal-situations, etc. (but see Rayner and Pollatsek, this volume for a different perspective). Eye movements, although rich in their potential, may not necessarily be deterministically related to states of comprehension in completely reliable ways (e.g., a reader may pause and stare at a random word while processing some text that is largely irrelevant to that word). Moreover, the problem that text comprehension, spoken language comprehension from say anonymous audio recordings, and genuine conversational comprehension with known interlocutors are very different things is mostly overlooked given the primary emphasis on appropriate dependent measures. One possible solution would be to further increase the sophistication of “comprehension” measures, such as combining emotional response indicators, eye-movement trackers, video facial expression recordings and other measures in a linked time course measurement (Colston, 2005a).

Within interdisciplinary discussions of figurative language, scholars from fields outside of psycholinguistics often see psychological experiments as being rather distant from their own concerns with the deep, meaningful, complex interpretation of different forms of figurative discourse (e.g., metaphor, irony, metonymy). Psycholinguists’ primary interest in immediate, fast, mostly unconscious mental processing of figurative speech ignores slower, more reflective aspects of linguistic interpretation. Gibbs (1994)

suggested that figurative language understanding does not constitute a single event, or moment in time, but can exist along a continuum of temporal processing ranging from fast comprehension, slower interpretation, nonobligatory recognition (i.e., that statement I just heard was ironic) to reflective appreciation. In the past, scholars have mistakenly made theoretical claims about fast processing from slower, and consciously held, interpretations and appreciations, while psycholinguists, again, have mostly neglected the rigorous study of cognitive effects, or the products of figurative language understanding.

Yet once more, paying systematic attention to cognitive effects, both those that arise immediately during fast comprehension, and those that emerge more slowly during reading (and re-reading!) is critical to creating more comprehensive theories of figurative language use in different real world, communicative contexts.

5.4. Materials

There are several aspects of the materials that have been shown to have a strong impact on figurative language use and processing. First, as described above, the conventionality of a figurative expression plays a major role in the way it is processed. But conventionality is not a single dimension, given that several factors contribute to the impression that some utterance is conventional or novel, including its grammatical form, frequency in the language, appropriateness to the specific context, and appropriateness for the speaker. For example, consider verbal irony. Conventional ironies will often take the form of rhetorical or tag questions (e.g., “wasn’t that brilliant?”, “that was brilliant wasn’t it?”). As mentioned earlier, conventional ironies also often contain noun or verb modifiers, usually intensifiers (e.g., simply, utterly, just, absolutely, etc.). With regard to semantics, a highly conventional ironic pattern is to use utterances with positive meanings, usually to comment about negative situations. Other semantic conventions in verbal irony are to express agreement (e.g., “yup,” “uh huh,” “sure,” etc.), to understate (e.g., “it seems to be snowing” said during a blizzard), to exaggerate (e.g., “her two foot tall husband,” said about a short man) or to express the semantic content that was predicted or that might be expected in the situation (e.g., “soccer is an ‘easy’ game”), often when the situation has not gone as expected (e.g., the game is difficult). For example, the ironic phrase, “wise guy,” is highly conventional in some American-English speaking communities because it is almost never used directly to state that a person is intelligent. Other utterances might have both ironic and literal conventional meanings. Examples here, again in some American-English speaking communities, are “oh, sure,” “I’m sure,” etc. Lastly, still other kinds of utterances are not at all conventionally ironic but might be used ironically in a given particular conversation.

The prototypicality of the material is also an important factor. The general pattern of results is that many kinds of processing (e.g., recognizing, recalling, reading, comprehending, etc.) are more readily accomplished to the degree that the target material they work upon is more prototypical. So, for instance, prototypical items of furniture (e.g., chair) are more easily and quickly recalled than less prototypical ones (e.g., lamp).

More prototypical forms of syntactic structure (e.g., active) are more easily read than less prototypical ones (e.g., passive), etc. For verbal irony then, one can readily predict that more prototypical forms (e.g., positive semantic content, intensifying modifier, tag question) will be more fluently processed than less prototypical ones (e.g., negative semantic content, etc.). Indeed, the particular finding in this example has been born out by research (Gibbs, 1986a, 1986b, Kruez & Glucksberg, 1989; Utsumi, 2000).

To demonstrate this prototypicality influence, recall the earlier discussion on semantic conventions for verbal irony. Often ironic utterances will contain positive semantic content, but they will be used to comment about a negative situation (e.g., saying or writing, "Excellent, just what I needed," to complain about an unexpected extra workload). This frequently observed pattern of verbal irony illustrates a semantic contrast, which is a major characteristic, and indeed necessary condition, for verbal irony (Colston, 2000b). Ironic utterances that present strong contrasts between expectations and reality are funnier, more criticizing, less self protective, more expressive of surprise, etc., than verbal ironies that provide relatively weak contrasts (Colston & Keller, 1998; Colston & O'Brien 2000a, 2000b; Gerrig & Goldvarg, 2000). These pragmatic functions are not direct measures of comprehension fluency but they do indicate the power of the contrast variable on the expressiveness of the irony and strongly suggest a processing fluency difference between strong and weak contrasts. One might thus predict that, as usual with all else being held constant, the greater the contrast between expectations and reality, the easier verbal irony processing might be.

One major influence on processing fluency that is idiosyncratic to verbal irony is the clarity with which a mention, echo, reminder, or allusion to prior predictions or expectations that have been violated by occurring events can be achieved (Sperber, 1984; Kreuz & Glucksberg, 1989; Kumon-Nakamura, Glucksberg, & Brown, 1995). Indeed such a contrast between the semantic content of the utterance and its referent situation is in fact a hallmark of the ironic figurative form (Colston, 2000b).

Metaphoric language also builds off from previous discourse structures that can quickly lead readers to metaphoric, as opposed to literal interpretations (Keysar, 1994), and in some instances are specific to this form of speech. Thus, contexts that describe topics in metaphorical ways make it easier to infer subsequent metaphoric utterances when the underlying conceptual metaphors are similar (Albritton, McKoon, & Gerrig, 1995), and more difficult to process when a new metaphorical utterance is based on a different conceptual metaphor (Langston, 2002). Although the vast amount of work on figurative language comprehension examines interpretation of a single utterance after a nonfigurative context, it is evident that different figurative contexts, and previously spoken figurative utterances, have a strong effect of on-line figurative language comprehension. This is one topic that demands further attention.

Finally, speakers use a wide variety of metalinguistic devices to indicate figurative intent. The phrase "strictly speaking" often accompanies metaphorical expressions (Goddard, 2004), and studies show that the presence of markers like "proverbially speaking" facilitates

people's comprehension of proverbs (Katz & Ferratti, 2003). One direct way to affect the comprehension fluency of verbal irony is by providing or omitting markers for the irony (Bryant & Fox Tree, in press). These markers can be controlled by a speaker or supplied in written context. For instance, nonverbal indicators of irony (e.g., gestures, facial expressions, etc.) can be performed or described (e.g., "she rolled her eyes and said"). Intonational patterns (e.g., nasal pronunciation, elongated phonemes, exaggerated pitch magnitudes, etc.), can be used or mentioned (e.g., "in a mocking tone he said"), etc. (Kreuz & Roberts, 1995). Speakers can also make simultaneous contradictory expressions to achieve expressional irony. For example a speaker could say, "Oh, yeah, he is brilliant," while making a gesture of tracing a circle around their ear, as if expressing that someone is crazy, and achieve an ironic perlocution. These factors would also contribute to the fluency of utterance processing, again to the extent that the speaker successfully uses them, that they are readily incorporated by the hearer, etc. In general, one might expect that the presence of such markers in the verbal and written situations would aid processing relative to their absence, again assuming equivalence of other influences.

5.5. Summary

Determining the constraints that shape the trade-off between cognitive effort and effects during figurative language understanding requires, in our view, the empirical study of how these various factors have their individual effects, and very likely interact in complex, even nonlinear, ways. The goals and motivations of individual speakers and listeners surely shape the cognitive effort expended when producing and understanding figurative language, and the specific orienting perspective, the methods used for assessing understanding, and the types of materials employed clearly determine the cognitive effects drawn in linguistic communication. Our hope is that specific recognition of these factors will enhance attempts to create a more complete picture of the trade-off between cognitive effort and effects in figurative language use.

6. CONCLUSION

The complexities of figurative language processing are such that there may not be a single theory or model that explains how all aspects of figurative language are understood. Part of the reason for this conclusion is that figurative language does not constitute a homogenous kind of language that is necessarily used and understood in completely distinct ways from nonfigurative, or what some call "literal" speech. Of course, one message of this chapter is that it makes little sense to suggest theories of figurative language understanding, as different from "normal" discourse comprehension, unless there is a well-developed, and consistently applied, theory of literal language and meaning. Given the long history to provide a theory of literal meaning (Gibbs, 1994), and the failure to come up with a unified account of this kind of language, we frankly are doubtful whether any such proposal will come forward that is widely embraced by psychologists, linguists, and philosophers.

None of this implies that different aspects of figurative language have no special features, both in terms of the cognitive processes involved (e.g., cross-domain mappings for metaphor, determining the source of echos for irony, inferring part to whole relationships with metonymy) and the meaning products that arise from interpretive processes. We have argued that the study of both cognitive processes and effects, or products, is critical to future theoretical work on figurative language, and that exploring the real-time trade-off between effort and effects is one specific direction for new experimental studies. In this way, figurative language research should provide another arena within psycholinguistics more generally where the traditions of language as product and language as action perspectives may be bridged.

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