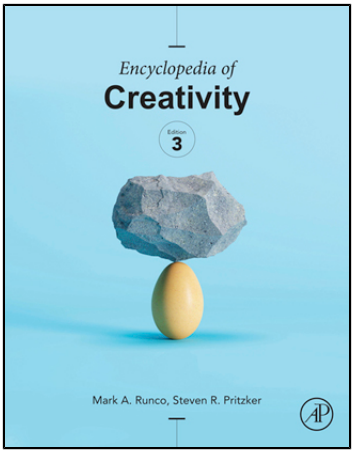

From Skalicky, S., 2020. Psycholinguistics. In: Runco, M., Pritzker, S. (Eds.), Encyclopedia of Creativity, 3rd edition, vol. 2. Elsevier, Academic Press, pp. 399–403.
ISBN: 9780128156148

Academic Press

Psycholinguistics

Stephen Skalicky, School of Linguistics and Applied Language Studies, Victoria University of Wellington, Wellington, New Zealand

Introduction: Linguistic Creativity and Creative Language

Language is fundamentally and inherently creative because every utterance spoken and word written is unique in some manner. In other words, within the reasonable confines of a language's syntax, speakers have almost limitless options when choosing not just the words they will use in an utterance, but also the ordering of those words, the way they deliver those words (e.g., tone, volume), and other paralinguistic information associated with those words (e.g., hand gestures). Every instance of language use is thus a representation of creative expression. Because psycholinguistics is a discipline devoted to understanding how humans produce, process, and comprehend language, it is, by extension, an investigation into a creative phenomenon.

This entry will review psycholinguistic investigations into what is known as *creative language* from the perspective of cognitive linguistics. Cognitive linguists are concerned with how language, thought, and behavior are shaped by one another, such as how features beyond linguistic structure (e.g., individual cognitive differences) influence language use, or how language may help researchers better understand how humans perceive and categorize the world (e.g., through conceptual metaphor). Accordingly, many cognitive linguistic studies employ psycholinguistic methods in order to explore different questions related to language and thought. As will be seen below, these methods have been particularly favored by linguists who investigate creative language, as they are used to determine whether creative and non-creative language significantly differ in terms of human behavioral responses (e.g., reading times, eye movements, sensibility ratings).

In order to gain a better understanding into this line of research, this entry will first describe general characteristics of the field of psycholinguistics, define creative language, provide an overview as to how different types of creative language have been explored using psycholinguistic methods, and finally suggest how these explorations can be aligned with more general examinations of creativity from the perspective of psychology.

Psycholinguistics

Psycholinguistics is a marriage between psychology and linguistics devoted to investigating connections between psychological processes and language use. Researchers in psycholinguistics are therefore varied in their approaches and research interests and investigate a broad number of research questions related to language, such as processing, production, storage, impairment, acquisition, and more. Psycholinguists have developed a number of specialized experimental tasks which measure behavioral responses to linguistic stimuli, including reading times, eye movements, physical responses, electrical activity in the brain, and so on. Data in these experiments are typically (but not always) measured using extremely small units, such as the number of milliseconds it takes to press a button in response to linguistic stimuli, or the distance that a subject's eyes move while reading different words in a sentence.

One of the goals of psycholinguistic research is to develop representative models for how language is processed and stored in the brain. There have been an overwhelming number of psycholinguistic models developed over the past decades, and these models are divided into those which explain written language comprehension, spoken language comprehension, spoken production, and so on. These approaches are further segmented into models explaining the lexicons (i.e., the mental representation of words and concepts) of monolingual versus multilingual language users. Modern psycholinguistic evidence suggests that language is stored in a probabilistic network of interconnected features, including linguistic structure (e.g., pronunciation, syntax), concepts, and other linguistic information which simultaneously activate and interact with one another during language use.

Encyclopedia of Creativity, Third Edition, 2020, 399–403

Creative Language

Recognizing that language production is an inherently creative act, there is a difference between the creative process of language production and the production of language that is itself considered creative. This distinction appears small at first but is fundamental to psycholinguistic investigations of creative language taken up here. From this perspective, creative language is defined as any sort of manipulation to language that results in an interpretation that is unexpected or otherwise unique (Gerrig and Gibbs, 1988). When describing creative language, there is usually a contrast made between the surface-level meaning of an utterance, also referred to as the *literal* meaning, and the alternative, creative meaning of an utterance. Generally, the creative meaning of an utterance cannot be inferred through a semantic decomposition of the literal, surface meaning of the utterance, but instead requires some additional cognitive processing in order to decode the intended meaning. Two of the major types of creative language that have attracted a large amount of attention in this area are figurative language and humor.

Figurative Language

Figurative language is a broad category of language that includes metaphor, idiom, verbal irony, satire, and more. Of these different examples of figurative language, two have received extensive investigation using psycholinguistic methods: metaphor and verbal irony.

Metaphor. Metaphor is the most widely studied form of figurative language, and the one most closely associated with language and thought. This is primarily due to work in Conceptual Metaphor Theory. According to this theory, conceptual metaphors are said to be not just an example of linguistic creativity but are reflective of fundamental processes behind human thought. Specifically, this theory posits conceptual metaphors are representative of the system employed by the human mind to categorize and understand different entities in the world. Conceptual metaphors are usually described using an *A is B* formula, where a target entity *A* is re-categorized by placing it into a different conceptual domain *B*. This re-categorization is completed when some, but not necessarily all elements of the source domain (B) are transferred to the target (A), which provides new ways of interpreting and understanding the target entity. For instance, in the conceptual metaphor *lawyers are sharks*, abstract elements of sharks (e.g., predatory, dangerous) are mapped onto concrete understandings of lawyers, so that the basic understanding of a lawyer (i.e., a person trained in the law) is adjusted to also include new concepts related to sharks (i.e., a person trained in the law who is also ruthless and predatory. Conceptual metaphor is thus an incredibly efficient way to communicate meaning because it allows for the expression of difficult concepts in a relatively concise yet vivid manner (see Metaphors).

Verbal Irony and Sarcasm. Verbal irony (i.e., spoken irony, as opposed to situational irony) is another widely investigated form of figurative language. Theoretical definitions of verbal irony have continuously evolved since the oppositional theory of irony first defined verbal irony as an utterance which means the opposite of its literal form. For instance, if a bleary-eyed office worker arrived unenthusiastically to work on a Monday morning, she might quip "*I love Mondays.*" The oppositional account of verbal irony considers this utterance as ironic because it is clear that the speaker actually means the opposite of what she said (i.e., that she does not in fact like Mondays). However, this definition of irony is unable to account for ironic utterances that cannot be reinterpreted as the opposite of their literal meaning. For instance, a frustrated teacher exclaiming "*I love it when you're on time*" when a student arrives late to class does not actually mean the teacher enjoys it when the student is late, but the utterance is nonetheless ironic in that situation because of the opposition between what was said, the context of the situation, and the more appropriate meaning. As such, the definition of verbal irony has been refined by scholars over the past several decades to now describe irony as an utterance that is both inappropriate yet relevant in a particular context (Attardo, 2000).

Humor

Much like figurative language, verbal humor (i.e., humor delivered through language) is a broad category and includes essentially any example of language that evokes a sense of mirth. Thus, while there are purposeful examples of verbal humor, such as canned jokes, puns, and other forms of wordplay, almost any utterance (including figurative language) can be perceived as humorous in a particular circumstance. Regardless of humorous intent on the part of the speaker, the process of humor comprehension has been typically described as the resolution of some form of incongruity among linguistic form, semantic meaning, context, and pragmatic knowledge. Resolution of this incongruity, such as recognizing the double-meaning of the word *coat* in the pun *the freezing painter hurried to put on a second coat* is where the sense of mirth and humor is said to arise.

Psycholinguistics and Creative Language

There has been a historic tendency for researchers and teachers in language and linguistics to treat figurative and humorous language as a deviation from the ostensibly normal, economical, and strictly communicative function of non-creative language (Glucksberg, 2001). Thus, it may not be surprising that some researchers interested in studying creative language were motivated to develop psycholinguistic models aiming to explain how creative language is produced and understood as an alternative process to non-

creative, (supposedly) standard language use. Accordingly, much of the early psycholinguistic research into creative language carried an assumption that creative language is somehow handled differently in the brain when compared to non-creative language (a point that has been long and sharply contested in the field but continues to persist). For both figurative language and humor, early models and experiments were designed to test predictions of the Standard Pragmatic Model.

The Standard Pragmatic Model. The Standard Pragmatic Model (SPM) represents a starting point for many theoretical descriptions for how hearers process and comprehend both humorous and figurative meaning. According to the SPM, figurative meaning is the result of a re-interpretation of a figurative utterance based on the pragmatic context within which it is stated. To understand the figurative meaning of an utterance, a hearer must first interpret the literal meaning of an utterance, reject the literal meaning based on contextual information, and then compile a new, figurative meaning, based on their understanding of the speaker's pragmatic intent and the surrounding context. Therefore, the SPM assumed that figurative meaning was dependent upon an initial literal meaning, which would suggest figurative meaning comprehension should take longer and require more cognitive effort than literal meaning comprehension, as multiple meanings must be considered.

Psycholinguistic Studies of Creative Language

Partially motivated by the predictions made by the Standard Pragmatic Model, early psycholinguistic research into figurative language comprehension was concerned with answering whether or not a hearer must first comprehend and then reject the literal meaning of a figurative utterance before arriving at the figurative meaning. The general approach of these experiments was to present research participants with linguistic stimuli that was controlled to bias either a literal or non-literal interpretation and then record differences in behavioral responses to that stimuli. For example, a researcher might show participants the phrase *He is a good soldier!* alongside information describing someone in two different ways: as a member of the military or as a hard worker. These two different descriptions would thus bias the same sentence to be read either metaphorically or non-metaphorically.

The researcher would then measure and compare behavioral responses among different participants to the same sentence in these two contexts. In general, slow behavioral responses would be taken as evidence that a participant expended more cognitive effort to decode the sentence, and therefore may be indicative of the two-stage processing predicted by the SPM if the metaphorical version took longer to read. In other words, the longer times would suggest that the participant first had to decode the literal meaning of the sentence "*He is a good soldier!*, compare that meaning to the context of the sentence (e.g., talking about the man being a hard worker), reject the literal meaning, and then search for an alternative and plausible meaning (namely, that the man is being compared to a solider for similar qualities that are reflective of a good or hard worker, with the assumption that soldiers are generally perceived to perform difficult tasks and must therefore work hard).

Metaphor Processing. Metaphor was studied extensively by cognitive linguists using psycholinguistic methods. The consensus is that understanding metaphorical meaning requires no more cognitive effort than understanding non-metaphorical language. Specifically, research demonstrated conventional (i.e., familiar and commonly used) and novel (i.e., uniquely coined and infrequently encountered) metaphors take no longer to process and understand when compared to their literal counterparts. Additionally, metaphorical meaning is activated even when metaphors are placed in literal biasing contexts, suggesting metaphorical meaning is primary and interpreted first when hearers encounter metaphorical utterances. There is therefore strong evidence suggesting that metaphorical meaning is not processed any differently than non-metaphorical meaning, even if the meaning of a metaphor is not a function of the surface meaning of a metaphor's linguistic form.

Explanations for this effect include links to Conceptual Metaphor Theory, which suggests that metaphorical comparisons are representative of how the human mind conceptualizes the world (see above), and therefore the default state of thought may in fact be metaphorical, which would allow for effortless interpretation of figurative meaning from metaphorical utterances. At the same time, many metaphors are so entrenched in language they have been described as dead, suggesting that any literal meaning which used to exist in a particular metaphorical phrase is no longer the primary meaning.

Verbal Irony Processing. Similar to metaphor, verbal irony has also been extensively studied by cognitive linguists using psycholinguistic approaches. Unlike metaphor, the resulting models and understanding of how verbal irony is processed has been less conclusive, and debates remain regarding whether verbal irony comprehension is primarily a two-stage process, whether the figurative meaning of an ironic utterance can be directly accessed in a manner similar to metaphorical meaning, or some combination of both. Based on psycholinguistic experiments of ironic language processing, two main theoretical models have been produced: a direct access view and a salience first view. The direct access view is based on Gibbs (1986) and other studies demonstrating no significant differences in reading times for ironic utterances and their literal counterparts and that manipulations made to the context of an utterance significantly predict comprehension and reading times. Specifically, Gibbs (1986) found that as the surrounding linguistic contexts were changed to bias ironic interpretations of ironic statements, participant reading times became quicker, and they were better able to remember the ironic utterances. Gibbs (1986) argued the contextual information present in his examples allowed for the direct processing of ironic meaning, and that the probabilistic incorporation of contextual information during reading is how the meaning of any utterance, literal or figurative, is obtained. In other words, the direct access view does not assume any single utterance contains an inherent, decontextualized meaning, and that the interpretation of figurative meaning requires processes no different than the interpretation of literal meaning, rejecting the predictions of the SPM.

The assumptions put forth by the SPM were also called into question by Giora (1997), who believed the divide between literal and figurative meaning overlooked the actual linguistic mechanism responsible for differences in processing time: the role of salience. Initially proposed to explain the processing of metaphor, Giora (1997) argued the most salient meanings of a phrase or utterance are always processed first, regardless of contextual influence. This is because salient meanings are frequent, familiar, conventional, and thus represent prototypical or standardized meanings. Importantly, these features are *graded*, in that their relative strengths determine how salient a particular meaning is to a particular person. Salient meanings are stored in the mental lexicon, allowing for quicker access and retrieval when compared to novel meanings that must be computed in the moment. Salient meanings are not specific to literal or figurative language and are so strongly activated they can mitigate the effects of prior context biasing a non-salient meaning. This feature, according to Giora (1997), is what explains the results of research showing no significant differences between processing times for metaphor, because metaphorical meanings are encoded into the lexicon. However, when hearers encounter figurative language representative of a non-salient meaning, they must first interpret the literal meaning of the utterance in order to determine the figurative meaning. In this manner, Giora's Graded Salience Hypothesis (GSH) subsumes both the direct access and Standard Pragmatic Model of figurative language processing. When meanings are salient, they can be directly processed without needing to consider alternative meanings (i.e., direct access view) because they are readily available in the lexicon. When meanings are not salient, the literal meaning is first interpreted, rejected, and ultimately replaced with the intended figurative meaning, derived from contextual clues (i.e., the Standard Pragmatic Model).

Humor Processing. Compared to research into figurative language, there have been relatively fewer studies investigating humor processing using psycholinguistic methods. Similar to the figurative language studies discussed above, theoretical models of humor processing were built on assumptions that humor comprehension is the result of a two-stage process involving the resolution of an incongruity between an intended and humorous meaning of a joke. However, several more recent psycholinguistic studies suggest that humor does not always require a two-stage process of incongruity resolution. For example, one study measured participants' eye movements as they read jokes or non-humorous proverbs that were said to be either from a comedian or a politician (Mitchell et al., 2010). This study found that participants' eye movements could be predicted depending upon whether the joke was framed as coming from a comedian or a politician. Essentially, if participants were reading a text from a comedian, they spent more time reading the initial framing or setup of the joke in anticipation of the punchline, which resulted in quicker processing of jokes when compared to the proverbs. In other words, if the participants were expecting humor, they prepared themselves to process any subsequent humor and thus overcame any additional demands the resolution of the incongruity might make upon their cognitive processing of the text.

A different study compared eye movements for participants who read jokes and non-humorous texts that nonetheless required some form of reinterpretation of meaning (Ferstl et al., 2016). For example, one text requiring non-humorous revision began with a judge asking a man if he had anything else to say, prompting a mental image of a courtroom scenario. The man's reply however, which was a reminder that the judge had an extra appointment the next morning, prompts a revision of the initial meaning into a new meaning (e.g., that the man is not a defendant in a court case but rather an assistant to the judge). The results from this study reported significantly fewer re-readings of the initial framing of the text if the text was humorous versus non-humorous. Ferstl et al. (2016) interpreted these findings as evidence that when a revision (or resolution of an incongruity) results in humor, the reader recognizes the humorous reaction as a confirmation of the resolved incongruity and does not need to further consider the initial meaning. For the non-humorous texts, the meaning revision resulted in significantly more re-readings of the prior context, suggesting that a non-humorous resolution is less acceptable to participants. Although Ferstl et al. (2016) claimed these results cast doubt on the need for a two-stage resolution process during humor comprehension, their results more strongly suggest that humorous meaning assists readers when they encounter incongruity (but does not rule out the need for two-stage processing).

Direct Connections to Creativity. Despite studying a creative product, many language researchers do not make connections between creative language and the larger construct of creativity as a cognitive individual difference. And the converse is equally as true; many studies of creative ability and creative potential neglect the role of creative language. There are exceptions to this – humor has been identified as a facilitator of creativity, and at least two studies have reported results suggesting the ability to produce higher quality metaphors is an index of creative ability (Beaty and Silvia, 2013; Silvia and Beaty, 2012). Another study examined the influence of sarcasm use (sarcasm is a common form of verbal irony which is usually negative in tone) on the ability to solve explicit tests of divergent and convergent creativity (Huang et al., 2015). In this study, Huang et al. (2015) hypothesized that both sarcasm use and creative ability relied on a similar cognitive construct (i.e., abstract thought). In their first two experiments, Huang et al. (2015) asked participants recruited from the internet to produce, comprehend, or recall past instances of sarcasm (or were assigned to a non-sarcasm control condition) before completing tasks designed to measure creative ability (i.e., the Remote Association Task and the Duncker Candle Problem). Regardless of how sarcasm was being used, exposure to sarcasm significantly boosted participants' performance on subsequent tests of creativity when compared to the control group. In Experiment 3, Huang et al. (2015) replicated the first two experiments using human subjects in a laboratory setting, which enabled them to include more complex tests of creativity (e.g., Olive in a Glass problem), and also measure participants' abstract thought using questions from a survey. Crucially, participants completed the survey questions *after* being exposed to sarcastic or non-sarcastic stimuli and *before* completing tests of creative ability. The results reported abstract thought was significantly higher for participants who produced and listened to sarcastic utterances when compared to the control conditions, and also that participants exposed to sarcasm outperformed participants in the control conditions on tests of creativity. Huang et al. (2015) took these results as evidence suggesting that sarcasm boosted abstract thought, which in turn increased creative ability.

Summary and Suggestions for Future Research

In general, the psycholinguistic research investigating creative language has proceeded by testing whether creative language requires a two-stage meaning interpretation before arriving at a figurative meaning. While some types of creative language appear to require no more processing time than non-creative language (e.g., metaphor), studies of verbal irony continue to produce evidence suggesting verbal irony takes longer to process than equivalent, non-ironic utterances, but also that other contextual features, such as familiarity or negated language, can result in verbal irony being processed just as quickly as non-irony. One commonality of this research, perhaps best highlighted in the research on humor comprehension, is that a two-stage process of creative meaning resolution is heavily dependent upon contextual features that are partially linguistic and partially external to linguistic forms. Thus, explanations for creative meaning comprehension tend to converge towards current psycholinguistic explanations for the comprehension of any utterance. It may indeed be the case that the same processes are at work when one is comprehending a creative or a non-creative utterance, and instead of a qualitative difference between two different processing models, it is instead a quantitative difference which depends upon a number of different features that continue to be highlighted by current research in the field.

There still remains a wealth of research questions that can be investigated in order to bring linguistic and psychological conceptualizations of creativity closer together. For instance, experiments investigating whether subjects with different creativity scores (e.g., divergent thinking test performance) process or produce creative language differently would be a relatively straightforward first step towards linking these two fields, as would testing whether completing creativity tasks affects subsequent performance on figurative language processing or production. At the same time, although figurative and humorous language are considered to be creative instances of language use, some examples of creative language are highly conventionalized and ubiquitous in everyday conversation, suggesting they may be more routine than creative. It would therefore be useful to conduct studies gathering layperson perceptions of creativity in creative language using constructs developed by psychology researchers (e.g., ratings of novelty and effectiveness). This research would align well with current pursuits in the field of creativity which have identified specific linguistic features predictive of creativity scores on divergent thinking tests.

As mentioned earlier, there is a fine distinction between being creative and using creative language, and future research investigating potential relations between these two notions could serve to benefit researchers in all fields studying creativity from multiple perspectives. By obtaining a better understanding of how psycholinguists have operationalized and studied creativity, researchers in psychology can gain additional perspectives and insight into creative language, which may serve to expand efforts in the field to better understand creativity as a whole.

References

Attardo, S., 2000. Irony as relevant inappropriateness. J. Pragmat. 32, 793–826.
Beaty, R.E., Silvia, P.J., 2013. Metaphorically speaking: cognitive abilities and the production of figurative language. Mem. Cogn. 41, 255–267.
Ferstl, E.C., Israel, L., Putzar, L., 2016. Humor facilitates text comprehension: evidence from eye movements. Discourse Process. 1–26.
Gerrig, R.J., Gibbs, R.W., 1988. Beyond the lexicon: creativity in language production. Metaphor Symbol 3, 1–19.
Gibbs, R.W., 1986. On the psycholinguistics of sarcasm. J. Exp. Psychol. General 115, 3.
Giora, R., 1997. Understanding figurative and literal language: the graded salience Hypothesis. Cogn. Linguist. 8, 183–206.
Glucksberg, S., 2001. Understanding Figurative Language: From Metaphor to Idioms. Oxford University Press.
Huang, L., Gino, F., Galinsky, A.D., 2015. The highest form of intelligence: sarcasm increases creativity for both expressers and recipients. Organ. Behav. Hum. Decis. Process. 131, 162–177.
Mitchell, H.H., Graesser, A.C., Louwerse, M.M., 2010. The effect of context on humor: a constraint-based model of comprehending verbal jokes. Discourse Process. 47, 104–129.
Silvia, P.J., Beaty, R.E., 2012. Making creative metaphors: the importance of fluid intelligence for creative thought. Intelligence 40, 343–351.

Further Reading

Gibbs, R.W., Colston, H.L., 2012. Interpreting Figurative Meaning. Cambridge University Press, New York, NY.
Giora, R., 2003. On Our Mind: Salience, Context, and Figurative Language. Oxford University Press, New York, NY.
Martin, R.A., 2007. The Psychology of Humor: An Integrative Approach. Elsevier Academic Press, Burlington, MA.
Veale, T., 2012. Exploding the Creativity Myth: The Computational Foundations of Linguistic Creativity. A&C Black.