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Tonia Nicole Davis	9 Apr. 2010

Who really turned off the light?:

Defining the licensing of metonymic clipping from an empirical standpoint

by

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Program in Linguistics

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An abstract of

A thesis submitted to the Faculty of Emory College of Arts and Sciences

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Abstract

Who really turned off the light?:

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Metonymy is the process by which one word stands for another, as exemplified by *I ate a box of cookies* (literally cookies – not a box – were eaten). In this research, we examine the semantic conditions that license the use of metonymy, and in particular, test the proposal that certain types of metonymic reference – those involving metonymic clipping – are licensed by agency-based vagueness. Metonymic clipping occurs when a single individual is used to refer to an entire series of events, as in *William the Conqueror changed the English language.* In Experiment 1, metonymic clipping was rated more acceptable for sentences with vague verbs (e.g. *change*) than without, and for sentences involving groups of agents rather than single agents. In Experiment 2, metonymic clipping was rated more acceptable for sentences in which there was temporal overlap between the initiator's and the agents' actions than when there was no overlap. Experiment 3 indicated that the conditions licensing metonymic clipping are not simply due to the sheer number of agents in the causal chain, but rather (by hypothesis) the vagueness of events in the series. Experiment 4 indicated that metonymic clipping was less acceptable when the agents of the action were named than when they were nameless. Implications of metonymy on our understanding of the interface between language and cognition are discussed.

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Who really turned off the light?:

Defining the licensing of metonymic clipping from an empirical standpoint

Language is not always literal. One dramatic tendency of formal semanticians and cognitive science theorists is to ignore non-literal language as "other," as "merely pragmatics," as "we'll figure it out once we get the basic structure down." Yet one would be hard-pressed to find examples of purely-literal language in everyday speech. If we adhere to Lakoff and Johnson's basic concept of conceptual (or cognitive) metaphor, a command as simple as "look up" is imbued with non-literal meaning.

Certainly, a part of language is referential. Words may refer to physical entities in the world. Sometimes this process is straightforward, e.g. a *book* refers to a book; a *cat* refers to a cat; a *house* refers to a house. Sometimes, however, there is no simple relationship between word and referent. Words may refer to other things.

(1) Shakespeare is on the shelf. (Ruiz & Hernandez, 2003)

(2) I whistled Mozart under my breath. (Seto, 2003)

In example (1), *Shakespeare* does not refer to the playwright who lived in the seventeenth century, but rather to his body of work. Similarly in (2), *Mozart* does not refer to the person himself, but rather an individual work accredited to his name. With that in mind, we might ask how it is that we know what the referent in these non-literal sentences is. Further, we may ask if there are underlying rules or principles as to what allows for such a referent.

The sentences in (1) and (2) illustrate a type of linguistic process called *metonymy*. Metonymy is the process by which a word or phrase stands for another within a single domain.[1] Metonymy is not

[1] *Metonymy* is not to be confused with *metaphor*, the process by which a word or phrase stands for another *across* domains.

acceptable in all situations – one cannot refer to the cat as the cat bowl or to Oscar Wilde as Shakespeare. There appear to be rules that govern when metonymy can be used. As discussed below, there are many different types of metonymy, and the rules or principles that license metonymy probably depend on the type of metonymy being considered. The type of metonymy that will be the focus of this research has been called *metonymic clipping* (Talmy, 1976). In metonymic clipping, an agentive noun phrase stands in for the whole causing event sequence (see also: Wilkins & van Valin, 1993). This phenomenon allows for the sentences in (3) and (4), among others, to be considered acceptable by the language user.

(3) William the Conqueror changed the English language. (Wolff, 2003)

(4) Nixon bombed Cambodia. (see: Pinker, 1989)

Clearly, in (3), William the Conqueror did not single-handedly change the English language. He merely defeated the British in the Norman Invasion, installed French-speaking nobles into positions of power, and, in the process, English became infused with French words, changing it. Similarly, in (4), Nixon did not actually drop any bombs on Cambodia; rather, he gave an order that was carried out by intermediaries.

We believe that sentences such as those in (3) and (4) are acceptable because they involve a certain kind of vagueness. Vagueness may be defined as a truth value "between" true and false, or it may be defined as having a proper truth value, only we do not know what that truth value is and resort to "vague" words in explanation (see also: Keefe & Smith, 1997, for an overview of vagueness). For our purposes, this vagueness concerns the boundaries of these causing and resulting actions or events. Hence, the reason why the sentences in (3) and (4) are acceptable is because they can be construed as a single event through an element of vagueness, with the initiator substituting for all actors within the event (see also: Wolff, 2003). Vagueness itself may take many forms. In (3), the verb itself, *change,* implies a certain level of vagueness by not offering a direct answer to "what happened" in the way that

a more precise verb might. Alternatively, in (4), the verb is specific, but the sequence of events is vague. While there must have been a chain of events between Nixon giving the order and bombs being dropped on Cambodia, few would be able to even begin to put together that sequence. As such, the question of how vagueness supports metonymic clipping may be tested in a variety of ways.

Hypotheses

In the following experiments, we will test whether metonymy can be manipulated to be "more" or "less" acceptable based on the amount of information and the type of information given in a scenario. It would be impossible to test all types of metonymy through one series of experiments, and to that end, we have focused our query on the process of metonymic clipping. Specifically, we have asked,

i) Does the specificity of the verb affect the acceptability of metonymic clipping?
ii) Do the amount and type of people deleted through metonymic clipping affect the acceptability of metonymic clipping?
iii) Does temporal overlap affect the distribution of agency and thus the acceptability of metonymic clipping?
iv) Can a chain of events act as a single event, allowing for the acceptability of metonymic clipping?
v) Does naming those agents who are deleted through metonymic clipping affect the acceptability of metonymic clipping?

These questions allow us to delve into the basic nature of metonymy as it relates to our understanding of events and agency. First, however, let us review the types of metonymy and the theories of metonymic licensing currently debated among linguists.

Types of Metonymy

The examples of metonymy in (1) and (2) might be considered Person-as-Product metonymies, where the person (Shakespeare, Mozart) substitutes for their product (*Much Ado About Nothing, Don Giovanni*) (see: Seto, 2003). It should be noted that in using *Shakespeare*, one offers a wider range of options: a collection, a specific play, some sonnets, or even, potentially, a secondary source discussing Shakespeare's works. If one were to instead say *Much Ado About Nothing* while pointing to a collection of Shakespeare's comedies, the sentence might not feel as appropriate to the listener.

The sentences in (3) and (4) offer examples of what has been referred to as Initiator-as-Actor metonymy, what we have called metonymic clipping, in which the person who started a series of events, setting off a "chain reaction," is considered the "do-er" of the action (Panther & Thornburg, 2000, see also: Wolff, 2003). Nixon, of course, did not actually drop any bombs on Cambodia; he just gave the order. It could be argued that these metonymies are not intrinsically different from the aforementioned Person-as-Product metonymies, as both contain a single (famous) person who stands in for something that they created or initiated. The sentences in (3) and (4), however, are examples of Talmy's metonymic clipping.

(5) The ham sandwich at table four wants his check. (Seto, 2003)

(6) The piano is in a bad mood. (Panther & Thornburg, 2003)

In contrast to examples 1-4, the sentences in (5) and (6) offers an example of Possession-as-Owner metonymy (Seto, 2003). The *ham sandwich* in (5) stands in for the person eating it (and paying for it), while the *piano* stands in for the person playing for it. Neither entity has the animacy to *want* or to have moods and emotions; both refer directly back to a person. These examples of metonymy may be categorized within a larger set of Inanimate-as-Animate, which would also include the Location-as-Agent examples in (7) and (8) (see: Panther & Thornburg, 2003).

(7) We just heard back from the White House. (Panther & Thornburg, 2003)

(8) The lecture hall burst into laughter. (Seto, 2003)

Alternatively, these examples may be members of a wider category of metonymy based in the metaphor of containment. The *White House* in (7) refers to a person within, presumably the President or an agent of the President. The *lecture hall* in (8) probably refers to the students attending a lecture. Animacy – and agency – has been given to the location of the humans agents within. Containment metonymies may also be found in non-location examples, as in (9) below.

(9) The kettle is boiling. (Seto, 2003)

The *kettle*, of course, should not be boiling; the water or tea inside it should be. Yet the kettle may well be making a whistling noise, becoming more salient to the speaker than the water inside of the kettle. Because the container is more salient, it may be used metonymically (Seto, 2003; see also: Radden, 2009). This particular example, like many of the previous examples, is so natural in English that it is not often recognized as a non-literal phenomenon by listeners within a conversational context. The fact that these metonymies are not always, even often, recognized as such by speakers implies that there are likely rules regarding what may license metonymy. In the following section, we will discuss several of these theories.

Theories of Licensing Metonymy

There have traditionally been two views of metonymy, although these views are beginning to come together and overlap. The first view of metonymy is as simple referent, where X is used to refer to Y, similar to how a pronoun might be used to refer to a person or object, meaning the same thing (see: Seto, 2003). The second view of metonymy is as a cognitive process, closely linked with cognitive metaphor. X is used in place of Y to highlight or activate a specific meaning based on the literal meaning of X (see: Barcelona, 2005).

In classical rhetoric and literature, metonymy is “the substitution of a word denoting an attribute

or adjunct of a thing for the word denoting the thing itself" (*New Shorter Oxford English Dictionary*, in Seto, 2003). Seto offers a new definition: metonymy as "spatio-temporal contiguity as conceived by the speaker between an entity and another in the (real) world." In other words, things that are close to each other in space and time can be used to refer to one another.

While this model allows for the examples given in 1-9, it offers no limits as to what allows metonymy, other than that the two entities must be related in some way in time and space. Here, the cat may just as easily be referred to by the cat bowl as the President may be referred to as the White House, e.g. (7), although no one listening would consider the substitution of *cat bowl* for *cat* acceptable. Further, consider the sentence in (5). Although spatio-temporal contiguity might allow the waitress to describe the man who needs his check as *the ham sandwich at table four*, it doesn't explain why, when offered, this example of metonymy was considered acceptable by a waitress, but not by a musician. Here, the professions of the individuals asked must be included in the rules that license metonymy. Seto's explanation offers a novel approach, but his parameters are so wide as to include virtually anything that is not already perceived as metaphor. In this contiguity-based approach to metonymy, the spatio-temporal distance between the entity (*the ham sandwich*) and event (*the man wanting his check*) should be the key factor in the licensing of metonymy, not the listener's profession. Yet this explanation is not irrelevant. With no empirical evidence currently existing as to the nature of metonymy, this approach can be easily tested empirically.

Radden and Kovecses (1999) offer as a "middle ground" approach a definition of metonymy as "the cognitive process where one conceptual entitity, the vehicle [source] provides mental access to another conceptual entity, the target, within the same cognitive model." Although they do define metonymy in the language of Lakoff and Johnson's conceptual metaphor, this definition allows metonymy to be based on conversational implicature and thus grounds metonymy in pragmatic linguistic literature, creating rules for the allowance of metonymy. According to Croft (1993) "that

metonymy involves highlighting is a common assumption among cognitive linguists" (in Radden & Kovecses, 1999). Here, metonymy provides some sort of "additional" information. Seto's *ham sandwich* in (5) is highlighted – the food item for the person – because that is the identifying characteristic, the essential information.

Radden and Kovecses's definition of metonymy offers an explanation as to why the sentence in (5) was deemed "completely acceptable" by the waitress but "completely unacceptable" by the musician. Further, their definition of metonymy implies that the licensing of metonymy is context-dependent. Ruiz and Hernandez (2003) continue upon this theory, offering that "metonymies allow the speaker to bring to the fore a cognitively salient subdomain of the matrix domain, with its accompanying inferential effects." This creates a potential problem for the empirical research of metonymy. Any metonymic example that is considered "too out of place" would likely be deemed unacceptable, and lab-based experiments are admittedly lacking in overall context.

Antonio Barcelona (2005, 2009), who has studied metonymy in its grammatical roles, considers metonymy the cognitive condition where "source and target... are linked by a pragmatic function, so that the target is mentally activated." Here, metonymy is not based on spatio-temporal contiguity necessarily, although many examples of metonymy will fit within that guideline. Further, metonymy is distinctly not the substitution of a referent for the entity. Metonymy is a highly cognitive process, where the source item may be deliberately chosen to create a specific effect in the context of an event. While this theory of metonymy is appealing from a cognitive standpoint, Barcelona considers metonymy a "nonprototypical meaning," which calls into question metonymies used so frequently that we might have a hard time recognizing them as metonymic, as in (9). Here, Seto's theory of relational metonymy might be a better indicator of how metonymy works. While it is possible that the *kettle* is activating a different, specific cognitive map than *water* might, it seems unlikely. It is also unlikely that the kettle is being highlighted for any specific purpose, but rather that in hearing the kettle whistle, the

speaker is referencing the most salient entity – the kettle, not the water.

Barcelona makes the well-known suggestion that there may be different types of metonymy, and that they may work in slightly different ways. In all theories of metonymy, it is clear that language plays a strong facilitative role. However metonymy is conceptualized, as spatio-temporal contiguity or cognitive "highlighting," these metonymies exists only through language. Yet how this mapping system works is dependent not only on context, but on the specific type of metonymic phrasing being activated.

While there are many types of metonymy, we focus on metonymy as it relates to events as in (3) and (4). Rappaport-Hovav and Levin (1997) argue that a process and its resultant state can, under specific circumstances, be represented as a single event (see also: Wolff, 2003). This view is substantiated by previous work on agency by Lyons (1968, 1977), who offers the paradigm for agency PRODUCE(agent, effect) where "in the common linguistic coding view," an individual causes an effect (in Wilkins & van Valin, 1993; see also: Panther & Thornburg, 2000). This can happen literally, but it may also occur metonymically.

Talmy (1976) supports these claims and coins the phrase "metonymic clipping," where the agentive noun phrase (the initiator of the sequence) may stand in for the whole causing event sequence (in Wilkins & van Valin, 1993). Here, William the Conqueror of example (3) stands for the events of a thousand years since his death, as English changed and developed. Talmy's research has focused on how events are "packaged" linguistically, and notes that, cross-linguistically, the head (initiator) of the event and the result of the event are expressed, while the middle details are "gap[ped] out."

Steen (1994) criticizes the non-empirical approach of Lakoff and Johnson and those who follow in their footsteps (Allan, 2008). Many of these theories are easily tested, and yet, historically, they have not been. Theorists have relied only on "ear acceptability," and it is not unusual, reading their works, to feel they stretch plausibility. Allan (2008) has begun work on building a linguistic corpus, collecting

thousands of examples of metonymy as it exists in the "real world." This work may eventually offer one explanation for the underlying rules of metonymy. We have attempted to offer an explanation through select empirical experimentation. Through the following experiments, we are able to begin to answer the questions of when and how metonymic clipping occurs (and does not occur), and to hypothesize as to why.

Testing the idea the metonymy depends on vagueness

Our proposal, as discussed earlier, is that metonymic clipping is acceptable when a series of events is construed as a single event via vagueness in the causing and resulting events or actions. There are several ways in which vagueness can be varied. One, vagueness can be varied by manipulating the specificity of the verb. For example, in the sentence *William the Conqueror defeated the British at the Battle of Hastings,* the verb specifies the nature of the change (*defeat*), whereas in the sentence (3)*, William the Conqueror changed the English language,* it is much less clear as to the nature of precisely what has occurred. Another way to vary vagueness is via specificity of the agents or entities involved in the event(s). For example, in (4), *Nixon bombed Cambodia* is acceptable, while *Nixon bombed the village of Prey Kdei, in the Svay Rieng province of Cambodia* would probably not be considered acceptable.

Given these two ways of varying vagueness, we are in a position to test the proposition that metonymic clipping depends on vagueness. In the following experiment, participants were presented with sentences describing a librarian asking students to turn out the lights as they left the library. The sentences varied with respect to the specificity of the verb or the number of students. Our main predictions were that people would be more likely to consider metonymy acceptable when vagueness was high; specifically, they would rate those sentences more acceptable where verbs were general or when more students were involved. These predictions were tested in the following experiment.

Experiment 1

Experiment 1 tested whether the specificity of the verb used to summarize the sentence affected the acceptability of the metonymic summary sentence. Experiment 1 also tested whether the amount and type of people deleted through metonymic clipping affected the acceptability of the metonymic summary sentence. In this experiment, participants were asked to read a short paragraph about a librarian ending his/her day, and turning out of the lights before leaving the library.

Method

Participants. The participants were twenty undergraduate and graduate students at Emory University, most of whom were recruited from introductory psychology classes. All experiments were conducted in the Cognitive and Linguistic Systems (CLS) laboratory at Emory University.

Materials. The materials consisted of a set of six short paragraphs about a librarian ending his/her day and turning out the lights. Four of these sentences included the potential for metonymy, while two controls sentences contained no metonymy. The six scenarios reflected the levels of two factors: size of groups (*self, one student, group*) and specificity of verb ("turn," "conserve"). The different levels of the size of the group factor were instantiated by paragraphs describing a male or female librarian turning out the lights him/herself, the librarian asking a single student to turn out the lights, and the librarian asking a group of students to turn out the lights. For example, in one paragraph, participants read the following:

> The librarian was leaving the library at the end of the day. There was still one student left, studying in a corral. The librarian asked that student to turn out the lights when she left for the night. This job required the student to go from floor to floor, turning out all the lights in the library. When the librarian returned the next morning, all the lights were off.

In another paragraph, the "Group" scenario, participants read:

> The librarian was leaving the library at the end of the day. There was still a number of students left, having a study group. The librarian asked the students to turn out the lights when she left for the night. This job required the students to go from floor to floor, turning out all the lights in the library. When the librarian returned the next morning, all the lights were off.

These participants were then asked the question,

> Is it acceptable to say, "The librarian turned out the lights"?

In half of the paragraphs, the change was described with a specific verb ("turn") while in the remaining paragraphs it was described with a general verb ("conserve"), i.e.,

> The librarian was leaving the library at the end of the day. She decided that she wanted to conserve energy by turning off all the lights... Is it acceptable to say, "The librarian conserved energy"?

In all scenarios, the lights were, in fact, turned off. For half of the participants, the librarian was female, and for the remaining participants, the librarian was male.

Procedure. Participants were first asked to read each paragraph and then to determine the acceptability of a metonymic sentence that summarized the paragraph. For the purpose of this experiment, acceptability was operationalized on a 0-9 scale, where 0 was "completely unacceptable; you would never consider this sentence an appropriate summary" and 9 was "completely acceptable; you would always consider this sentence an appropriate summary." In all experiments, participants also had "control" sentences that were completely literal and contained no metonymy. This literal sentence served as a check for whether participants were reading carefully and contributing as accurately as possible. The sentences were presented on Windows-based computers using E-Prime (Psychology Software Tools, Inc., 2008). The ordering of the sentences was randomized differently for each participant.

Results

As predicted, participants' willingness to metonymize was affected by the generality of the verb and the size of the group (see Table 1 and Figure 1). Using a two-factor repeated measures ANOVA, we found that participants' willingness to metonymize was higher when the paragraph contained the general verb "conserve" than when it contained the more specific verb "turn," $F(1,19) = 33.33$, $MSE = 104.22$, $p < .01$, with an effect of $\eta^2 = 0.65$. Analysis of variance also indicated that acceptability judgments were affected by the size of the group (self, one student, group), at $F(1,19) = 22.27$, $MSE = 212.22$, $p < .01$, with an effect of $\eta^2 = 0.55$. Finally, analysis of variance revealed that acceptability ratings for group size differed for the two types of verbs, as indicated by a significant verb x group size interaction, at $F(1,19) = 11.03$, $MSE = 39.80$, $p < .01$, $\eta^2 = 0.380$.

Further analyses indicated that participants were more willing to metonymize when the paragraphs described a group of students rather than a single student, but only when the verb was specific (i.e., "turn"), $t(19) = -2.79$, $p<0.05$. Participants considered metonymic clipping significantly more acceptable when the group was metonymized out of the summary sentence, as opposed to when a single individual was.

Table 1: Mean acceptability ratings for Experiment 1 (standard deviations in parentheses)

Scenario	"Turn"	"Conserve"
"Self"	8.25 (2.02)	7.75 (1.25)
"1 Student"	1.74 (2.33)	5.83 (2.43)
Group	3.70 (3.10)	6.00 (2.49)

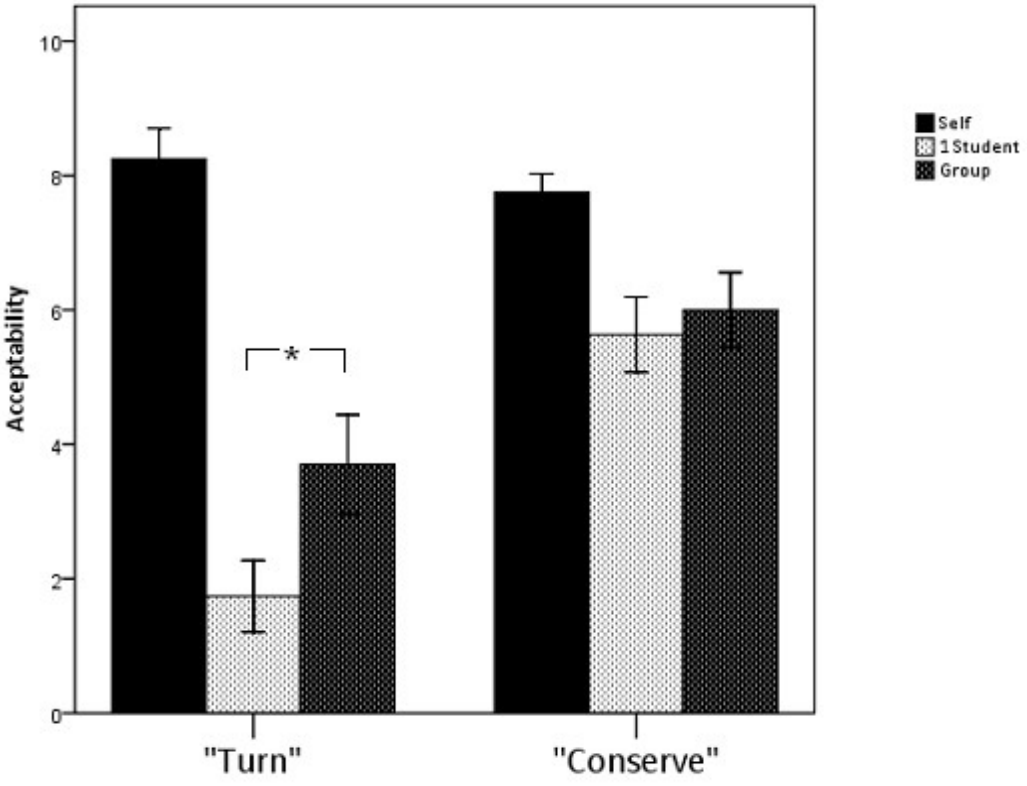

Figure 1. Acceptability of metonymic clipping as a function of verb type ("turn," "conserve") and group size ("self," "1-student," "group"). SE bars +/- 1.0.

Discussion

The results of Experiment 1 suggest that verb type makes a difference in licensing metonymy, as do the number of participants who are "deleted" due to metonymic clipping. These results support the hypothesis of vagueness as a factor that allows for metonymy in two ways. First, the granularity of the verb appears to be a factor in allowing metonymy. It is acceptable to give credit to the person who began the energy conservation process, but it does not appear acceptable to give credit to the person who began the turning-out-the-lights process – a much more physical, observable task.

Yet, the question of group size – that the deletion of a group is more acceptable than the deletion of an individual – brings into question how this vagueness phenomenon works. Therefore, we

might ask: do sheer numbers make the difference, as do the number of steps between *William the Conqueror* and Modern English in (3)? Or does this vagueness have more to do with the diffusion of agency, so that when the deleted intermediary agent is an individual, they must maintain their agency, while in a group, agency can be passed on to the "head" of the cohort? We believe that metonymic clipping is the result of vagueness, and that there may be different types of vagueness. The following experiments test different types of vagueness as they attribute to the acceptability of metonymic clipping.

Experiment 2

Experiment 2 was designed to test whether manipulating the temporal overlap[2] between agents might make a sentence be considered more vague, and, correspondingly, more acceptable. The materials were the same as in Experiment 1, except that in the present experiment, there were two different ways in which the librarian interacted with a group of students. In the Overlap conditions, the librarian starts asking students to turn out the lights an hour before she departs. Over the course of the hour, students leave, turning off lights in different sections of the library. By the time "the last student and the librarian finally [leave]," all the lights have been turned off. In the Overlap conditions, the actions of the librarian overlap with those of the students. In the No-Overlap conditions, the librarian asks the group of students to turn out the lights and then leaves before any of the students themselves leave and turn out the lights.

The main prediction was that participants should be more willing to metonymize in the Overlap conditions than in the No-Overlap conditions. The current experiment also included the Self and 1-Student conditions present in Experiment 1. As in Experiment 1, it was predicted that participants should be unwilling to metonymize in the 1-Student conditions since in this condition there is no

[2] Temporal overlap was chosen with regard to Seto's original explanation of spatio-temporal contiguity as a limiting factor with regard to metonymy. When there was a temporal overlap, so too would there be a spatial (location) overlap.

diffusion of responsibility and hence relatively little vagueness in what occurred. These conditions were included to offer a potential replication of the results from Experiment 1.

Method

Participants. Fifteen students at Emory University, undergraduate and graduate, participated in the experiment. Approximately half of subjects were pulled from introductory psychology classes, while half were recruited as paid participants.

Materials. As in Experiment 1, half of the materials included a specific verb ("turn") while the remaining materials included a general verb ("conserve"). The materials also varied with respect to the size of the group (*self, one student, group overlap and group no-overlap*). Unlike in Experiment 1, the group conditions were partitioned into two types of scenarios: an Overlap and No Overlap scenario. In the Overlap scenario,

> The librarian was leaving the library at the end of the day. There were still a number of students left, having a study group. An hour before she left, she asked the students to turn out the lights when they left for the night. As the students slowly left, they turned out lights in different sections of the library. By the time the last student and the librarian finally left for the night, all the lights had been turned off. When the librarian returned the next morning, the lights were still off.

Correspondingly, in the No Overlap,

> ...as she was leaving, the librarian asked the students to turn out the lights when they left for the night. As the students slowly left, they turned out lights in different sections of the library. By the time the last student finally left for the night, all the lights were off. When the librarian returned the next morning, the lights were still off.

Crossing the verb and group size factors resulted in eight different sentences.

Procedure. The procedure was the same as in Experiment 1.

Results

As shown in Table 1, the results supported the main prediction of the experiment, namely that people are more likely to metonymize when the actions of the librarian and the students overlapped than when they did not overlap. This finding, was supported in a two-factor repeated measures ANOVA. This analysis showed that acceptability ratings differed for the different group sizes, $F(1,14) = 10.27$, $MSE = 11.11$, $p < .05$, with a medium effect size of $\eta^2 = 0.43$. In addition, as shown in Figure 2, for the "Conserve" sentences, participants showed no significant difference between the "overlap" and "no overlap" scenarios. For the "Turn" sentences, participants were significantly more likely to consider the "overlap" scenario's summary sentence acceptable as compared to the "no overlap" scenario at $t(15) = 2.51$, $p<0.05$.

Table 2: Mean acceptability ratings for Experiment 2 (standard deviations in parentheses)

Scenario	"Turn"	"Conserve"
"Self"	8.87 (0.35)	7.93 (2.02)
"1 Student"	1.60 (2.23)	5.47 (2.70)
Group (overlap)	3.53 (2.48)	4.73 (2.84)
Group (no overlap)	1.73 (2.12)	5.40 (2.77)

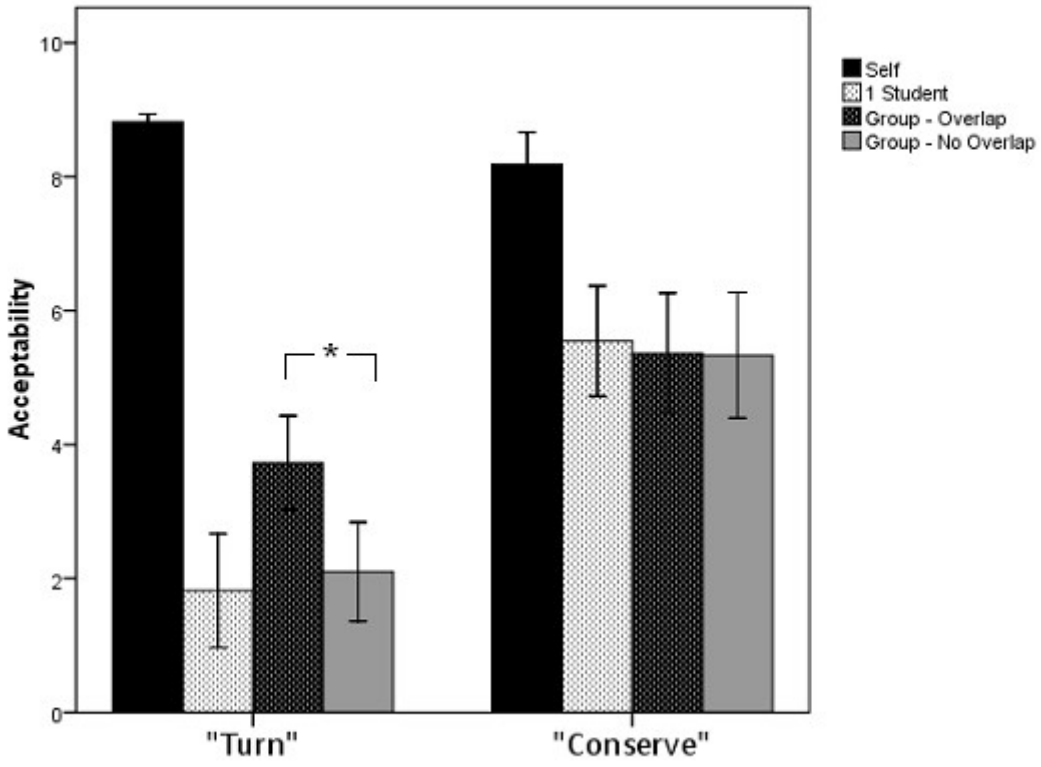

Figure 2. Acceptability of metonymic clipping in Overlap and No-Overlap conditions for both "Turn" and "Conserve" verbs. SE bars +/- 1.0.

Discussion

Experiment 2 demonstrates that people are more likely to consider a metonymy acceptable when the initiator of the action (the librarian) is still present at the time of the action, even if he or she does not act on the object directly (instead, using an intermediary). While the Group Overlap x "Turn" condition appears comparable to the Group x "Turn" condition of Experiment 1, where a time frame was not specified, the Group No-Overlap x "Turn" condition now looks comparable to 1-Student x "Turn" (in both Experiments 1 and 2). However, this is only true in the "Turn" scenarios, suggesting that the "Conserve" verb overrides this phenomenon with its inherent vagueness, making it acceptable regardless of temporal overlap. It should be noted that temporal overlap is not strictly a matter of

vagueness; however, when compared to Experiment 1, Experiment 2 suggests that lack of temporal information (in Experiment 1) is comparable to the positive temporal information given in Experiment 2 (the Overlap condition). Still several questions remain: would a chain of agency serve the same effect as this undetermined "group" of students? Is the librarian scenario particularly salient, more so than other situation? Does the authority figure at the head of the agency distribution make a difference in the efficacy and acceptability of the metonymy?

Experiment 3

Experiment 3 tested whether a "chain reaction" might take place within metonymic clipping, allowing for the earlier discrepancy in acceptability between the 1-Student (generally rated "not acceptable") and Group conditions (considered fairly "acceptable"). According to the contiguity view of metonymy (see: Seto, 2003), the earlier agents of the chain should be considered more acceptable than the later agents; however, according to the agentive theory[3] of metonymy, the longer the chain, the more likely that metonymizing to the initiator (here, *the teacher*) would be acceptable due to diffusion of agency. To test this opposing hypotheses, we used only a variation of the "turn" scenario used in Experiment 1.

Further, we anticipated that the use of an authority figure at the beginning of the chain, also seen in previous scholars' examples in (3) and (4), would make the metonymic expression more acceptable. We therefore varied whether the head of the sentence was an authority figure (*the teacher*) or an equal (*the student*). Researchers predicted that if the length of the chain was a licenser of metonymy, it would be according to the agentive view of metonymy, and that acceptability would escalate as the chain became lengthier. Researchers also predicted that authority would affect the acceptability of metonymic clipping.

[3] This Agentive Theory is of our own creation, based on the idea that as there are more agents, metonymic clipping may become more acceptable. Experiments 1 and 2 use agency through diffusion of authority (a "group"), while Experiment 3 uses an explicit chain of agents.

Method

Participants. The participants were twenty students and graduate students. Approximately half of subjects were pulled from introductory psychology classes, while half were recruited individually. Three participants were removed during initial analysis because they rated the literal sentence at less than 5 for acceptability.

Materials. The materials consisted of five sentences, all of which were paired with summary sentences as in Experiments 1 and 2. In the single-agent version, which served as a control, participants received the sentence:

> The teacher flipped the switch, and the light turned off.

Participants were then asked to rate the acceptability of a summary sentence:

> The teacher turned off the light.

There were five possible chain lengths for the sentences, i.e., length *3*, below:

> The teacher told the student, who told a second student, who told a third student, to flip the switch, and the light turned off (etc).

Sentences were balanced with regard to gender differences where needed, and a total of five possible simple events were used (sending the phone to voicemail, closing the door, launching a catapult, etc) at every chain length, totaling twenty-five possible sentences. Thus we were able to determine of there were a bias towards one physical task being "more acceptable" for metonymy than the others. Participants received ten sentences in total, two at each of the possible five chain lengths (authority and non-authority conditions). The order in which participants received the sentences was randomized.

Procedure. The procedure was the same as in Experiments 1 and 2.

Results

As shown in Table 3, the results of Experiment 3 do not support the predictions that metonymizing would be more acceptable in the lengthier chains. Neither do the results support the prediction that the authority conditions would be considered more acceptable than the non-authority conditions. Using a two-factor repeated measures ANOVA, we determined that authority was not a significant factor across all chain lengths. Further analyses of variance revealed that acceptability ratings were non-significant across chain lengths with exception to length *1* (the literal sentence) differing from lengths *2-5*, at $F(1,19) = 45.95$, $MSE = 117.80$, $p < .05$. This difference is to be expected, since it compares the non-metonymic (literal) summary to the metonymic (non-literal) summaries. Although the "non-authority" sentences were on average rated higher than the "authority" versions, the difference between the two was non-significant, and there was also no interaction between chain length and authority; these results may be found in Figure 3 below.

Table 3: Mean acceptability ratings for Experiment 3 (standard deviations in parentheses)

Chain Length	Authority	Non-Authority
1	8.45 (0.89)	8.45 (0.99)
2	1.95 (3.12)	3.9 (2.85)
3	1.80 (2.46)	2.85 (2.78)
4	2.40 (2.52)	3.80 (2.98)
5	3.25 (2.95)	3.30 (2.41)

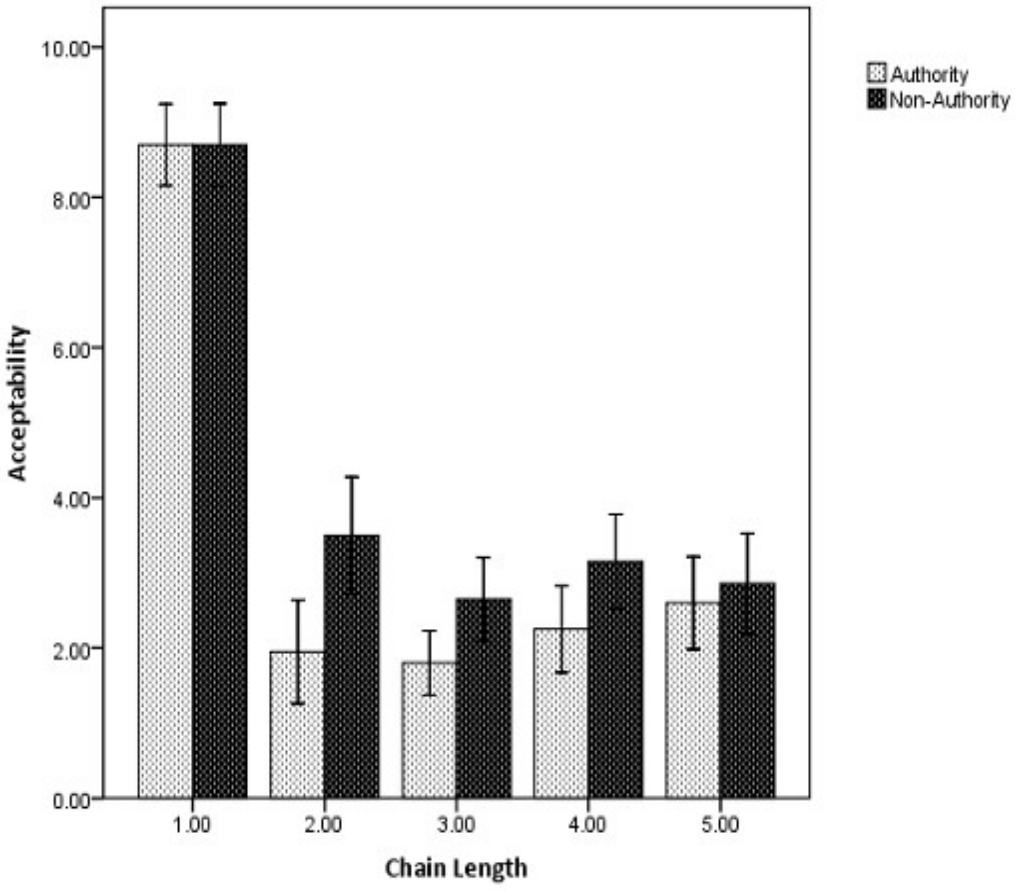

Figure 3. Acceptability of metonymic clipping in over increasing chain lengths. Sentence 1 is literal while sentences 2-5 are metonymic in nature. SE bars +/- 1.0.

Discussion

Experiment 3 offers a possible explanation for precisely what "vague" phenomena are taking place in Experiments 1 and 2. The results of Experiment 3 suggest that the actual number of people and the length of the chain of agency do not necessarily matter in terms of metonymic acceptability.[4] Further, the particular paradigm used in Experiments 1 and 2 is not particularly more acceptable than other simple mechanical situations. Finally, using an authority figure (*the librarian*) at the head of the

[4] While this experiment provides strong evidence against the contiguity view of metonymic clipping, it could be argued that the chain was simply not long enough to accommodate the agency-based approached ("how large was the group of students in Exp. 1 and 2"?). In response, we ran a further version of Experiment 3 with a chain-length of 10, with comparable results.

chain is unlikely to have created an extraordinarily acceptable scenario.

It is important not to conclude that authority does not make a difference in terms of acceptability. Nearly all the examples of metonymic clipping collected by Talmy (1976, in Wilkins & Van Valin, 1993) and Wolff (2003) suggest that in some capacity, authority does affect the acceptability of metonymy.

Experiment 4

Experiment 4 was designed to test whether naming the individuals involved (thereby making them considered "less vague") would decrease the acceptability of the metonymic clipping. As with Experiment 3, Experiment 4 was designed to "check" Experiments 1 and 2. In Experiment 4, participants were asked to rate the acceptability of the *librarian* sentences when the clipped agents were anonymous (*the student*) or named (*Meredith, Brandon, and Savina*). The main prediction was that participants would be less willing to "delete" those students via metonymic clipping who were named than unnamed, in both the 1-Student and Group conditions. The Unnamed conditions, both 1-Student and Group, were identical to the conditions in Experiment 1. Based on the results of a short pilot study, participants were tested only in the "Turn" conditions, in order to eliminate fatigue at rating sentences that appear so similar to one another.

Method

Participants. The participants were twenty students and graduate students. Approximately half of subjects were pulled from introductory psychology classes, while half were recruited individually. Three participants were removed during initial analysis because they rated the literal sentence at less than 5 for acceptability.

Materials. The materials of the current experiment were based on Experiment 1. Only "Turn"

conditions were used. Conditions varied with respect to group size (*self, one student, group*) and also, in the 1-Student and Group conditions, to naming (*named, unnamed*), as in the scenario,

> The librarian was leaving the library at the end of the day. Meredith, Savina, Brandon, and Sam were still left, having a study group. As she was leaving, the librarian asked the students to turn off the lights. This required Meredith, Savina, Brandon, and Sam to go from floor to floor, turning off the lights. When the librarian returned the next morning, all the lights were still off.

In total, there were five different sentences in Experiment 4.

Procedure. The procedure was the same as in Experiments 1, 2, and 3.

Results

As predicted, participants' willingness to metonymize was affected by the generality of the verb and the size of the group (see Table 4 and Figure 4). In Experiment 4, naming on its own was not a significant variable. However, using a two-factor repeated measures ANOVA, the interaction between naming (*named, unnamed*) and size (*one student, group*) was significant, at $F(1,14) = 13.79$, $MSE = 14.89$, $p < .01$, and an effect size of $\eta^2 = 0.49$. By running paired t-tests, we were able to establish the pattern of this interaction. For the paired t-test between 1-Student conditions (*named* and *unnamed*), the difference was not significant. For the paired t-test between Group conditions (*named* and *unnamed*), the difference was significant at $t(14) = 3.01$, $p < .05$. Following these results, naming was significant at the group level, but not at the individual level.

In Experiment 4, for the Unnamed Group, $M = 2.60$, which was not visually comparable with Experiment 1's indeterminate (also unnamed) Group's $M = 3.70$, which used the exact same question. However, a paired t-test between the different experiments showed this difference to be non-significant.

Table 4: Mean acceptability ratings for Experiment 4 (standard deviations in parentheses)

Scenario	"Turn"
"Self"	8.67 (0.89)
"1 Student" (unnamed)	2.07 (2.46)
"1 Student" (named)	1.47 (1.69)
Group (unnamed)	2.60 (2.72)
Group (named)	1.27 (1.62)

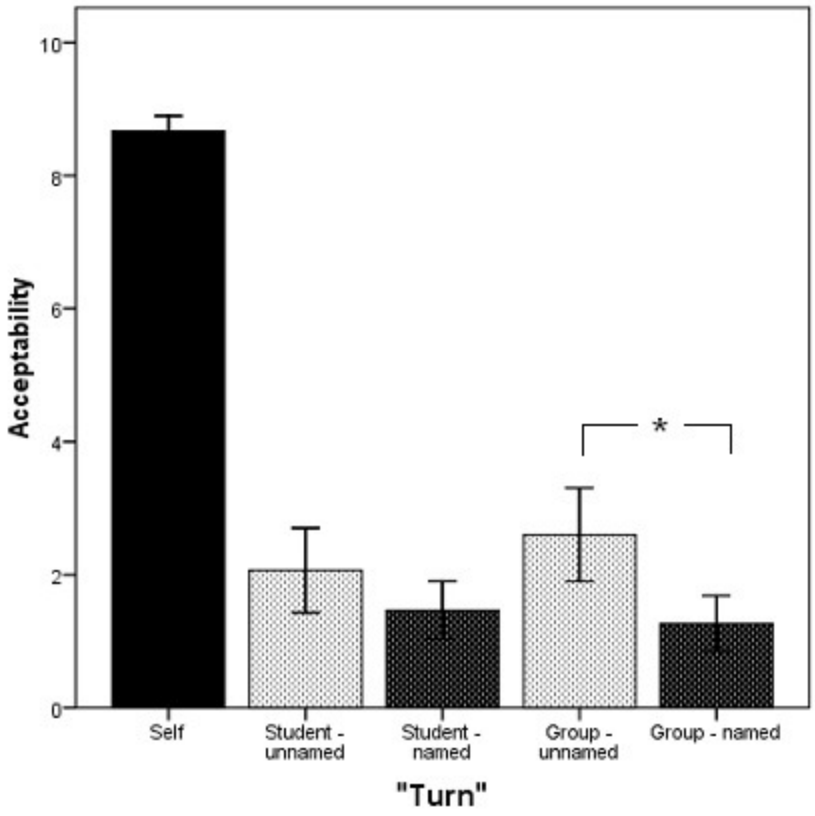

Figure 4. Acceptability of metonymic clipping in "Named" and "Unnamed" conditions for the "Turn" verb. SE bars +/- 1.0.

Discussion

Experiment 4 suggests that vagueness is not based only on temporal overlap or the particular class of verb used to create the metonymic expression. By manipulating the amount of information one had about the individuals in the group – their names, and correspondingly, their numbers – we are able

to suggest that naming alleviates vagueness and undermines the diffusion of agency. Once given names, the individuals in the group are no longer an undifferentiated entity used by the original agent to perform a task. Rather, they have an individual agency of their own.

It is worth noting that in Experiment 4, unlike any of the previous experiments, 7 of 15 participants rated the literal sentence a "9" on acceptability of metonymic clipping (the highest possible score), and rated all other sentences a "0." We believe that, lacking the plausible explanation of "environmental conservation" that participants offered in Experiments 1 and 2, participants were highly focused as to the specific wording of each question and less likely to consider any of the metonymic phrases. The fact that we had significant results despite half the participants deeming the more-acceptable (*unnamed*) sentences "completely unacceptable" is a testament to the power naming had on the other half of the participants.

General Discussion

The four experiments highlighted above offer a baseline from which we may begin to formulate the rules for the licensing of metonymic clipping. Experiment 1 suggests that the verb in the metonymic phrase can be a strong licenser of metonymy, so that a vague verb (e.g. *change, conserve*) is more likely to be used metonymicly than a more literal verb. This verbal effect was strong; further experimentation could not manipulate the effect of the vague verb. Experiment 1 further suggests that in some capacity, the size of the group or the number of agents being deleted also has an effect on metonymy, with the larger group being deleted acceptably, while the single intermediary agent's deletion was not acceptable.

Experiment 2, beyond answering the question of whether vagueness regarding temporal overlap plays a role in metonymy, suggests that the licensing of metonymy can be manipulated through just a

few words. Experiment 2 also supports an agency-based theory of metonymic clipping (see: Talmy, 1976; Wilkins & van Valin, 1993), since the Group No-Overlap x "Turn" condition was rated "unacceptable," with participants requiring the intermediary agents to receive credit for their actions, instead of the librarian. To properly cross-balance this effect, further experimentation should test whether the 1-Student condition would receive higher acceptability ratings when a temporal overlap is specified. Experiment 2 suggests that when the agency of the intermediaries is highlighted (via removing the initiating agent), metonymy becomes less acceptable.

Experiment 3 tested whether this agency effect exists only in Group conditions, or if it might also exist in an explicit chain of events (see: Wolff, 2003). In Experiment 3, we determined that a single-chain cause of events was not an effective source of metonymy, either in terms of contiguity (see: Seto, 2003) or in terms of metonymic clipping (see: Talmy, 1976). We also have some evidence that the number of intermediary agents should not matter in licensing metonymic clipping, although further experimentation should examine this number relation within the initial (Experiments 1 and 2) paradigm. Experiment 3 also alleviated concerns of some possible experiment limitations regarding the paradigm used in Experiments 1 and 2.

Experiment 4 also tests whether vagueness can be manipulated to allow for metonymy, this time by manipulating how the intermediary agents were viewed by participants. The "named" conditions were less likely to be rated acceptably than the "unnamed" conditions, suggesting that individuation in terms of how the intermediaries are considered facilitates viewing these intermediaries as unique agents or as a conglomerate "controlled" by the initiating agent.

Through the aforementioned empirical studies, we are able to demonstrate that metonymy is an intrinsic part of language users' knowledge of language rules. Further, metonymy exists within certain underlying linguistic and cognitive rules that license its use as "appropriate" or not. Significantly, the acceptability of a metonymy may be manipulated through a variety of factors. Researching specifically

with metonymic clipping, we have called this general category “vagueness,” with verb type, group size, and the individuation of “clipped” individuals conceived as variables that may be manipulated to encourage or undermine vagueness.

Limitations

The above experiments are, by virtue of being the first empirical evidence in the field, limited. It would be arrogant to say that because we can manipulate metonymy in these particular paradigms, we can make definitive generalizations about how metonymy works. Although Experiment 3 attempts to alleviate some of the more salient limitations of the paradigm – that the "librarian" scenario is not unusual among simple-task scenarios, that the length of the chain does not affect acceptability – more experimentation is needed, and should be pursued in the future. This section highlights several limitations of the experimental design itself, rather than discussing the limitations of these experiments in their application to the pertinent question.

These experiments were all within-subject designs, which means that for each experiment, participants saw every possible scenario. It is possible that participants may have guessed the research question, although this concern was in part alleviated in post-experiment interviews, where many participants in Experiment 1 explained that they thought the experiment was about environmental conservation, presumably because they focused on the "Turn" vs. "Conserve" variable in the experiment. The concern that participants answered comparatively is in turn alleviated by Experiment 4, where participants only received "Turn" scenarios, yet their answers were comparable with those in Experiment 1 on the "unnamed" conditions.

More concerning, however, is the fact that the order in which participants received the sentences appeared to affect their ratings of acceptability. In Experiment 1, the mean acceptability given by participants who received the 1-Student x “Turn” condition in the first half of the experiment (tests 1-3)

was $M = 1.06$. The mean acceptability given by participants who received the 1-Student x "Turn" condition in the second half of the experiment (tests 4-6) was $M = 2.27$, while the overall mean was $M = 1.74$. While these results were highly consistent across the four experiments, and, based on random assignment of sentence order, each sentence received the same place close to equal numbers of times, this phenomenon should be addressed. While it does not conflict with our theories of how metonymic clipping works and may be manipulated, these results suggest that the data is highly manipulable and may be influenced easily. A between-subjects design would be able to address this issue, but was not possible in this set of experiments based on the limited number of available participants.

Implications

The implications of the previous experiments may be divided between implications for the study of cognitive linguistics and implications for the study of pragmatics.

Cognitive implications. Experiment 1 suggests that people treat individuals differently from groups in our willingness to metonymize groups. There is no suggestion here that this different treatment is simply the result of larger numbers; "a group" may be chunked as an single entity just as an individual might (and, indeed, the individuation manipulations in Experiments 3 and 4 suggest that the "group" is functioning as a single entity). People appear to find it more acceptable to give credit to the initiator of an action rather than the agents when the agents are unspecified, undetermined, and unknown. Conversely, people find it less acceptable to take credit for an action away from a single individual than a comparable group of individuals. The social and political implications here are self-evident.

Is this effect only linguistic, or could it be found in other forms of cognition? Taylor (1993) offers that "[many linguists] have argued that... linguistic expressions involve a speaker's construal, conceptualization, or mental representation of the state of affairs... [not] the state of affairs [itself]" (see

also: Zlatev, 1997). That metonymy exists at the interface of language and cognition has been well supported by theorists (Talmy, 1976; Lakoff & Johnson, 1980; Croft, 1990; Panther & Thornburg, 2000; Barcelona, 2005). What is the nature of this relationship? Could there be an overarching cognitive process is encompasses the linguistic utterance (here, metonymy), rather than the cognitive process being dependent on the linguistic feature? Further research could use pictures to identify the individuals or groups being metonymized rather than giving them names, as in Experiment 4. Moreover, having metonymized linguistically, would people be less likely to pick out specific information about the people in the group (i.e., what they looked like, what they were wearing) than about the individual? Having recognized its existence, can this grouping effect be removed via awareness or training?

Pragmatics implications. Metonymy is a non-literal function of language, and as such, could potentially be computed in the manner of implicature (Radden, 2009; see also: Grice, 1989, for a discussion on conversational implicature). In this view, the listener, upon hearing the utterance, computes the non-literal utterance in order to decipher the meaning. The computation of a metonymic sentence would include its "highlighted" meaning if there is one, as in (9):

(i) The speaker has stated, *the kettle is boiling.*

(ii) I know that, literally, the kettle is not boiling.

(iii) So I can assume what the speaker *means* is that whatever is in the kettle, probably tea or water, is boiling, rather than the kettle itself.

(iv) If the speaker had wanted to say "tea" or "water," he would have,

1. Therefore, there is a reason why the speaker chose to say *kettle*. What is that reason?
2. Alternatively, the speaker probably *did* want to say "tea" or "water," but the sound of the kettle whistling activated *kettle* and so they used *kettle*.

Consider how this computational model might work for the examples of metonymic clipping in

Experiments 1, 2, and 4:

(i) The speaker said, *the librarian turned out the lights*.

(ii) I know that the librarian did not literally turn out the lights, which means this statement is not literally true.

(iii) The librarian did, however, pass on agency to another individual (or individuals), and is therefore the initiator of the action.

(iv) Therefore, the librarian may – provided that the rules licensing metonymic clipping and diffusion of agency are followed – stand in for the subsequent actions that produced the desired effect.

Metonymies should be even more acceptable in a conversational context as opposed to a lab setting, as speakers intend to move the conversation forward (see: Grice, 1989). Yet, given additional information that cancels vagueness and the diffusion of agency, people are no longer willing to metonymize; the sentence becomes unacceptable.

This evidence provides some support for the claim of Dale and Reiter (1994) that human speakers have trouble determining if an object belongs to a specified class; here, participants appear to have treated sentences as "general" until they were explicitly made specific (as when comparing the mean acceptability ratings of the "Group" in Experiment 1 and the "Overlap Group" in Experiment 2). In our experiments, people seemed to prefer the use of general categories (verb specificity, temporal overlap/contiguity, individuation) in licensing the use of metonymy, and treated undifferentiated categories as though they were general. From here, we might ask: what does this mean for our understanding of type, category, and (linguistic) classification? Does this tendency toward the general bear out in literal language, or is it only a feature of non-literal language? Is this tendency cross-linguistic, as Talmy suggests is the case for the initiator-action connection of metonymic clipping, or does this generality/specificity aspect of vagueness differ according to the given language?

Conclusions

The aforementioned experiments are unprecedented in the literature on metonymy. Based on the four experiments related in this paper, we may conclude that the phenomenon of metonymic clipping is licensed via certain cognitive and linguistic mechanisms, most notably with regard to a certain vagueness of verb type or a lack of specificity of the time or individuals involved. Metonymic clipping is licensed by certain rules addressed here, and, no doubt, others. Further, the licensing of metonymic clipping may be manipulated via specific vagueness mechanisms. This paper represents what is likely the first empirical evidence of metonymy, as it exists as a cognitive and linguistic phenomenon.

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