

Aptness Predicts Metaphor Preference in the Lab and on the Internet

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ABSTRACT

Experimental studies have suggested that variables such as aptness (Chiappe & Kennedy, 2001) or conventionality (Gentner & Bowdle, 2008) are predictors of people's preference for expressing a particular topic–vehicle pair (e.g., “time–money”) as either a metaphor (“TIME IS MONEY”) or a simile (“TIME IS LIKE MONEY”). In the present study, we investigated if such variables would also be predictive within a more naturalistic context, where other variables, such as the intention to include an explanation (Roncero, Kennedy, & Smyth, 2006), may also influence people's decision. Specifically, we investigated the production of metaphor and simile expressions on the Internet via the Google search engine and checked for accompanying explanations, as well as the properties they expressed, to examine whether ratings such as aptness, conventionality, as well as participants' own stated preference or the intention to produce an explanation, would predict which topic–vehicle pairs appeared more often as metaphors. We found that participants' stated preference predicted metaphor dominance on the Internet, and that apt topic–vehicles occurred more often as metaphors. The explanations collected, however, occurred 82% of the time after similes, and familiar expressions were the most explained. Finally, comparing the properties expressed in these explanations to normed property lists, we found that simile explanations typically expressed a novel conception of the topic–vehicle relationship. Therefore, we found that Internet posters use metaphors to convey an apt relationship, as found in previous laboratory studies, but prefer using a simile frame when they want to express a relationship that readers will find novel.

Metaphors (e.g., “*LAWYERS ARE SHARKS*”) and similes (“*LAWYERS ARE LIKE SHARKS*”) connect a topic (“*lawyers*”) to a vehicle (“*sharks*”), but ever since Aristotle (Rhetoric, Part 10, 1926) proclaimed that “the simile . . . is a metaphor, differing from it only in the way it is put,” the factors determining the choice between a metaphor or simile form have puzzled cognitive scientists (see, e.g., the papers in Gibbs, 2008). If these forms of expression truly convey the same meaning—differing only in the way they are put—it is perhaps pertinent to ask why both forms coexist in most, if not all, languages. One could expect one form to simply dominate to the point where the other form becomes archaic and even absent. However, the fact that two forms continue to exist might suggest that each serves a unique purpose; that each in fact conveys a different meaning. Crucial to helping solve the puzzle of metaphor and simile coexistence is an investigation of their occurrences in naturalistic contexts, which may help us better understand Aristotle's perennial conjecture.

Thus far, most studies investigating the production and comprehension of metaphors and similes have employed well-controlled experimental methods (e.g., Bowdle & Gentner, 2005; Glucksberg & Haught, 2006), but relatively few studies have investigated how these expressions are used in

naturalistic contexts (outside the laboratory) which is critical for further establishing the validity of laboratory-based studies and determining the variables that drive the choice for one or another form (Roncero, Kennedy, & Smyth, 2006; for sample corpus analyses see MacArthur, Oncins-Martínez, Sánchez-García, & Piquer-Piriz, 2012). A more naturalistic investigation can also bring to light new variables that are perhaps less easily captured in the lab. There are, thus, two main reasons for investigating whether or not metaphors and similes are produced and understood in the laboratory as they are in naturalistic contexts. One is methodological: attaining further ecological validity for experiments. Another reason bears on the pragmatic function that these expressions carry, which is better tested in their proper utterance contexts. Towards this end, we took advantage of the wide availability of linguistic corpora in the form of Internet posts, which provide a rich naturalistic source for the investigation of variables that most commonly drive the use of metaphors and similes. Specifically, we investigated if particular variables obtained from a large normative study (Roncero & de Almeida, 2014a), and which are known to predict metaphor preference in the laboratory, would also predict Internet writers' choice for using a metaphor or simile, in their posts employing various topic-vehicle pairs such as “lawyers-sharks.”

Aptness and vehicle conventionality as predictors of metaphor preference

Chiappe and Kennedy (2001) called aptness the degree of salient properties shared by a topic and vehicle term. Compare, for example, the metaphor “*I think Richard is a lion*” and the simile “*I think Richard is like a lion.*” In principle, predicating lion to Richard (or stating that Richard is in the category of lions) makes a stronger statement than comparing Richard to a lion. This is the view taken by Chiappe and Kennedy (2001), for whom preference for metaphors compared to similes reflects the need to express greater similarity between topic and vehicle because metaphors are understood as categorization statements: “*X IS Y*” conveys that “*X*” has all of the properties that are true of “*Y*,” whereas “*X IS LIKE Y*” implies that some, but not all of the properties related to “*Y*” are also related to “*X*.”¹ Based on this line of reasoning, Chiappe and Kennedy predicted, and found, that people preferred the metaphor form when they believed that the topic and the vehicle shared many salient properties (i.e., when the expression was apt).

The major competitor to aptness as a predictor of metaphor preference has been vehicle conventionality as outlined by career of metaphor theory. Gentner and colleagues (e.g., Gentner & Bowdle, 2008) have argued that vehicle terms that are now commonly used in a figurative manner (e.g., “*drug*”) gained metaphorical meanings from initially being understood via “structural alignment”² between representations that are constituents of simile expressions, thus triggering comparative processing. Over time, as people effectively become accustomed to interpreting this vehicle figuratively, this additional figurative meaning or sense could be stored in semantic memory, and be retrieved because it becomes conventional or simply dead.³ For example, pairing the vehicle “*drug*” with various topics seems to express the notion of addictiveness in each case: “*SHOPPING IS LIKE A DRUG*”; “*ICE CREAM IS LIKE A DRUG*”; “*TV IS LIKE A DRUG*”—making “*drug*” a highly conventional vehicle. Career of metaphor theory assumes that the association between a word and a

¹Throughout this article we talk rather loosely of “properties” without committing ourselves to the view that properties (or “features”) are semantic constituents of word meanings. These properties are taken to be the sorts of semantic information that a particular word or expression “activates” or computes in the course of comprehension, or the semantic content that favors a particular choice of linguistic expression in the course of production.

²Structural alignment in the present context is Gentner’s (e.g., Gentner & Bowdle, 2008) hypothesis for how meanings or senses of an expression’s constituents are interpreted (viz., by a system of analogical relations established between the concepts accessed by topic and vehicle words).

³We have been using “metaphorical meaning” on the assumption that the meaning of a common copular metaphor (“*Richard is a lion*”) is different from the compositional meaning of the expression—the meanings of the constituent words and how they are put together structurally. Strictly speaking, there is only “literal” meaning with alternative interpretations (even perhaps senses) arising as a consequence of the literal meaning (or its rejection), but we follow common practice and take metaphorical meaning to refer to what one understands of (or intends to produce with) a particular expression.

given meaning, thus, evolves from metaphors being originally understood as similes. More specifically, when vehicles lack an associated figurative meaning, they force comparison processing whereby people must identify relations shared by the topic and vehicle terms. However, when the same vehicle term is used with various topic terms over time, it can come to acquire a conventional figurative meaning. Thus, for conventional vehicles like “*drug*,” career of metaphor theory predicts that people can access the figurative meaning directly, which allows the figurative relation to be understood as a categorization rather than initiating a comparison process. This switch from comparison to categorical processing is predicted to also be expressed linguistically via a preference for the metaphor form (e.g., “*TV IS A DRUG*”) rather than the equivalent simile form (“*TV IS LIKE A DRUG*”). Consistent with this prediction, Bowdle and Gentner (2005) contrasted expressions containing vehicles that were either conventional or novel (i.e., without yet an associated meaning) and found that participants preferred the topic–vehicle pairs with more conventional vehicles as metaphors rather than similes.

In summary, according to career of metaphor theory, the choice between metaphor and simile reflects the extent to which a vehicle’s additional figurative meaning is known. When it is well known (i.e., conventional and stored in semantic memory), then either a metaphor or simile structure might occur, but if the vehicle lacks a figurative meaning (i.e., unconventional), then a simile alone is predicted, giving rise to structural alignment whereby the figurative meaning can be derived from comparative processing. Our focus in the present article will leave aside issues related to semantic polysemy and disambiguation. Instead, we seek to test the hypothesis that a preference for a metaphor or simile form is related to vehicle conventionality. It is important to stress that career of metaphor’s definition of conventionality is specific to the vehicle (e.g., “*money*”) rather than to an expression such as “*TIME IS MONEY*.” Therefore, within career of metaphor theory, there are only conventional vehicles rather than conventional metaphors (i.e., complete phrases or sentences such as those with the form “*X IS Y*”). If so, a novel vehicle (a word that has only a literal meaning) needs to be understood within a simile structure first (and thus enter into analogical processing) to yield a figurative meaning. Consequently, career of metaphor theory predicts that people will prefer the form that reflects the type of processing used to interpret that topic–vehicle pair, and if people comprehend more conventional metaphors as categorizations rather than comparisons, then they should also prefer reading the topic–vehicle pair as a metaphor because its categorical structure initiates categorical processing (“grammatical concordance”; Bowdle & Gentner, 2005). In contrast, when categorization is not possible because the vehicle is not conventional, a comparative process is needed and participants are predicted to prefer the simile structure because its structure initiates comparative processing. Consistent with the aforementioned predictions, Bowdle and Gentner (2005) found topic–vehicle pairs with more conventional vehicles were preferred as metaphors rather than similes.

More recent studies, however, have cast doubt on Bowdle and Gentner’s (2005) results. Jones and Estes (2005) directly tested whether more conventional vehicles induced more categorical processing. Participants first read a literal or figurative prime (“*That librarian is/saw a mouse*”) and then immediately asked participants whether the topic (“*librarian*”) was a non-, partial, or full member of the vehicle category (“*mouse*”). Category attribution was greater (i.e., accepting “*librarian*” as part of the “*mouse*” category) after figurative than literal primes, and also greater for more conventional metaphors than less conventional ones. However, this effect disappeared when aptness ratings were included as a covariate. Repeating the study with aptness ratings, category attribution was greater for more apt metaphors. These results suggest that aptness, rather than conventionality, promotes categorization and a preference for a metaphor rather than a simile. It has also been determined that the novel metaphors used by Bowdle and Gentner (2005) were less apt than their conventional metaphors (Glucksberg & Haught, 2006; Jones & Estes, 2006). Therefore, the findings attributed to conventionality, could also be attributed to aptness, as the more conventional metaphors were also more apt than the less conventional metaphors (Glucksberg, 2008). In a follow-up study, Jones and Estes (2006) contrasted aptness and conventionality using items that carefully controlled for these

variables. Metaphors had similar vehicles, but different topics (e.g., “A rooster is an alarm clock” vs. “A robin is an alarm clock”). Because the vehicle is the same, the conventionality level is the same, but aptness is reduced when the salient meaning associated with the vehicle is a less salient property for that topic. For example, “A rooster is an alarm clock” is more apt than “A robin is an alarm clock” because the relevant property (the sound of birds waking people in the morning) is a more salient property of roosters than of robins. Jones and Estes found aptness, not conventionality, predicted preference for metaphors over similes, as well as faster reading times.

Is metaphor preference a predictor of metaphor use?

Metaphor preference in the previously mentioned studies was generally collected from participants by presenting a metaphor along with an adjacent comparable simile statement, and asking participants to what extent they prefer the metaphor or the simile expression. Such metaphor preference ratings, however, could lack ecological validity because they may not capture how people actually use metaphors and similes in real utterance contexts. More specifically, preference for reading a topic–vehicle pair as a metaphor may not predict whether someone will actually later produce that topic–vehicle pair as a metaphor when given the chance to do so. Furthermore, there could be additional pragmatic factors that influence form choice. Roncero et al. (2006), for example, found that similes were more often followed by explanations than metaphors—especially when expressions were conventional—and noted that explanations tended to convey novel meanings (e.g., “Time is like money because only retired executives have both”). Gentner and Bowdle (2008), discussing these results, suggested that Internet writers may purposefully use the simile form to invite readers to consider a novel interpretation: “Given that a base [i.e., vehicle] has a conventional meaning, if the writer wants to invite going beyond that meaning, a return to the simile is one way to invite a fresh comparison between base and target [i.e., topic]” (p. 121).

Glucksberg and Haught (2006) have also argued that the semantic representations of metaphors and similes are different in that similes refer to the vehicle literally, but figuratively in metaphors. They found evidence in favor of this hypothesis when participants listed more literal properties when topic–vehicle pairs were read as similes (e.g., “Some ideas are like diamonds”) rather than metaphors (“Some ideas are diamonds”), which were found to elicit more abstract properties. However, a recent replication of this procedure with a larger database of topic–vehicle pairs by Roncero and de Almeida (2014a) found that properties elicited by metaphors and similes were almost always the same, differing largely in frequency (i.e., a quantitative, rather than a qualitative difference). Nevertheless, it is possible that within the context of the Internet, such tendencies could be more prevalent.

Explanations created to produce novel interpretations when people write deliberate statements may also force writers towards a simile because it brings to the forefront a comparison process—a re-examination of the relation between topic and vehicle—allowing for new meanings to be produced. As argued by Steen (2008, 2015) via deliberate metaphor theory (DMT), people at times use metaphors deliberately, in that they are aware of these expressions’ figurative meaning and the subsequent cognitive effects in the minds of comprehenders: “the communicative function of metaphor is to produce an alternative perspective on a particular referent or topic in a message ... we may want to call this *perspective changing*” (Steen, 2008, p. 231). Although reading writers’ and speakers’ minds is impossible (as far as the evidence goes), DMT argues that “a metaphor is used deliberately when it is expressly meant to change the addressee’s perspective on the topic” (Steen, 2008, p. 222,); that is, utterances that appear to have a perspective-changing goal could be seen as ones created deliberately. This perspective-changing is obtained by eliciting cross-domain mapping which allows for a re-examination of the topic (target) and vehicle (source) constituents: “deliberate metaphors are those cross-domain mappings that involve the express use, in production and/or reception, of another domain as a source domain for re-viewing the target domain” (Steen, 2008, p. 223). Although it is arguably difficult to determine if cross-domain mapping has actually occurred

for various metaphors (Steen, 2015), we can assume that similes are likely candidates to yield a change of perspective because the word “like” is expected to initiate a comparison process during interpretation. Thus, a high occurrence of simile statements combined with subsequent explanations that appear to change perspectives on topic referents would be consistent with DMT (see also Roncero et al., 2006).

The present study

We examined how metaphors and similes with the same topic–vehicle pairs were written on the Internet to check if the preference exhibited by Internet posters was consistent with variables hypothesized to influence metaphor preference: aptness, conventionality, and a variable we will refer to as deliberateness (following Steen, 2008), operationalizing it as the occurrence (frequency and type) of explanations produced following metaphors and similes. We take these explanations following metaphors and similes to be a hallmark of writers’ intentions to produce an expression—and moreover to produce a novel meaning. In addition to investigating metaphors and similes produced on the Internet, we compared preference for metaphor or simile obtained in the lab to preference found on the Internet when the same topic–vehicle pairs were chosen. Our strategy was to collect preference ratings from lab participants, and then test whether or not these ratings correspond to preference on the Internet. More specifically, we counted how often people used a topic–vehicle pair as a metaphor or as a simile on the Internet to determine frequency counts for each topic–vehicle pair as a metaphor and as a simile, and subtracted topic–vehicle counts from each other to create frequency difference scores. These scores served as our Internet version of the metaphor preference ratings obtained from lab participants. We then examined if the metaphor preference ratings collected from participants could predict these frequency difference scores. For both sets of preferences (lab and Internet), we also ran regressions with aptness and conventionality ratings to examine how each variable might predict preference for one or another form. Running regressions with comparable data, one from lab participants and one with Internet frequency counts, allowed us to examine to what extent our ratings collected in the laboratory could predict actual real world use. Finally, in order to examine whether additional pragmatic factors—the intention to produce an explanation or express a novel relationship (deliberateness)—would be predictive of metaphor or simile preference, we also noted when a subsequent explanation was written, and ran correlations between these explanation counts and normed familiarity ratings. A significant correlation with familiarity would support Gentner and Bowdle’s (2008) argument that simile explanations are used to convey alternative interpretations for well-known expressions. In addition, in order to test Roncero et al.’s (2006) hypothesis that these alternative interpretations reflect unexpected properties, we compared the properties expressed by Internet explanations to normed properties obtained from a pencil-and-paper property listing task (Roncero & de Almeida, 2014a). A lack of overlap between the properties listed by participants and those found in explanations gathered from the Internet would suggest that explanations are used more often to convey “unexpected” meanings. Furthermore, the combination of a structure that emphasizes the topic–vehicle relationship (i.e., a simile) combined with the emergence of a novel interpretation would be consistent with the notion that the phrase was used deliberately, thus also providing evidence for DMT.

Method

The metaphors and similes used in the present study were selected to take advantage of published norms for 84 topic–vehicle pairs written as either copular metaphors (“X IS Y”) or similes (“X IS LIKE Y”) with simple topic–vehicle constituents (e.g., “LAYWERS ARE (LIKE) SHARKS”; Roncero & de Almeida, 2014a). The norms employed in the present study were property lists, conventionality ratings, aptness ratings, and familiarity ratings, as discussed next. For the present study we also

collected metaphor preference ratings, which, together with the published norms, were the basis for our analyses of the Internet-obtained expressions.

Metaphor and simile norms

Topic–vehicle pairs underwent extensive norming as part of a separate study (Roncero & de Almeida, 2014a), which included several phases. We describe these phases rather briefly here, for clarity. First, the set of topic and vehicle words written as metaphors, as similes, or as pairs of words were presented to subjects in order to elicit a property. Specifically, participants were presented with a booklet containing one of these forms and asked to write three properties they felt the statement (or word pair) expressed. For example, they could have written “protecting,” “strong,” and “firm” for the metaphor “*FAMILIES ARE FORTRESSES*.” The property written most frequently for an expression was typically the property given in the conventionality ratings, which was the second phase of norming. For conventionality ratings, participants rated to what extent the vehicle in the presented expression (metaphor or simile) was used to express a particular property. For example, “addiction” was the most frequent property for “*LOVE IS A DRUG*” in the properties task, and participants were subsequently asked to rate to what extent the word “drug” was used to convey addiction in statements such as “*X IS A DRUG*,” using a 10-point rating scale (1 = *not at all conventional* to 10 = *very conventional*). For aptness ratings, the third phase of norming, participants were presented metaphors or similes, and asked to give an aptness ranking on a 10-point scale (with 10 representing high levels of aptness). For familiarity ratings, participants rated how familiar they found each expression, based on how often they had heard or read the statement in the past, on a 10-point scale. Roncero and de Almeida found that the individual metaphor and simile ratings for aptness, conventionality, and familiarity were either highly correlated or not significantly different from each other; therefore, in the present study, we used the averaged metaphor–simile score for aptness, conventionality, and familiarity ratings to examine the predictive value of each variable. For example, the mean metaphor aptness rating was 5.95, and the mean simile aptness rating was 5.69. These high levels of aptness make it difficult to determine if metaphor or simile aptness ratings are a better predictor of expression form. However, our interest is less in determining if a particular score is related to metaphor or simile aptness and more in the variable aptness itself—whether or not it can serve as choice predictor, and the same can be said of the variables conventionality and familiarity. Moreover, when we examined the properties expressed in Internet metaphor and similes, in comparison to those listed by lab participants in the study by Roncero and de Almeida (2014a), we relied solely on those listed for metaphors because property lists written for metaphors and similes in that norming study were typically the same regardless of whether participants had read metaphors or similes.

Metaphor preference ratings

A total of 104 Concordia University students, all native English speakers, were recruited to participate in the preference ratings task, and all received course credit for participation. These participants were given booklets containing both metaphors and similes formed from the 84 topic–vehicle pairs, with one expression beside the other, and they were asked to rate to what extent they preferred the form as a metaphor or as a simile. All participants were instructed on which expression represents a simile (all containing the word “like”) and which represents a metaphor. In the 5-point rating scale, 1 was labeled *simile only*, 2 was labeled *simile more than metaphor*, 3 was labeled *no preference*, 4 was labeled *metaphor more than simile*, and 5 was labeled *metaphor only*.

Internet frequency counts for metaphors, similes, and subsequent explanations

For the same set of topic–vehicle pairs written as similes or metaphors, frequency counts for metaphors and similes were obtained by employing the method used by Roncero et al. (2006).

Topic–vehicle pairs were written as sentences in metaphor form (e.g., “*RAGE IS A VOLCANO*”) and simile form (e.g., “*RAGE IS LIKE A VOLCANO*”), and each sentence was then searched on Google. The search engine displays a list of websites that contain each sentence and its linguistic context. A count of distinct websites containing the searched item constituted the frequency count for that sentence. To ensure that the frequency count included only relevant and spontaneous productions of metaphors and similes, the same constraints from Roncero et al. (2006) were used to determine whether a specific production could be included in the frequency count. For example, the constraint of “1 web page = 1 production” ensures that repetitions of the same production listed within the same website are recorded as a single production, while the constraint of “1 context = 1 production” ensure that all expressions with the same pattern are also recorded as one production. It is true, however, that Google can potentially yield many thousands of occurrences for a particular topic–vehicle pair as a metaphor or simile; therefore, consistent with Roncero et al. (2006), only the first 30 legitimate productions of each metaphor and simile were counted. This cut-off was reached by 21 of the topic–vehicle pairs (25%).

When a sentence was included in the frequency count, we also checked if there was a subsequent explanation, using the constraints outlined by Roncero et al. (2006). Specifically, the subsequent sentence after a metaphor or simile was accepted as an explanation if it was introduced with the word “because,” but when the subsequent sentence was introduced with a different conjunction, or no conjunction, the sentence was still included as an explanation when it could be interpreted as an elucidation of the expression after inserting because in place of the conjunction (or was simply inserted if none was present). For example, “*Life is a journey, not a destination*” would not be accepted because the phrase after “journey” does not have the meaning of an explanation after inserting the word because (i.e., “*Life is a journey because [it is] not a destination*”). In contrast, a sentence such as “*Music is medicine as it is very soothing*” would be accepted because the phrase after the metaphor works as an explanation when the word because replaces the word “as” (i.e., “*Music is medicine because it is very soothing*”). We also followed the constraint of no repetition to ensure that only unique unrepeated explanations were included in the count. Therefore, the number of explanations found reflects the number of different explanations occurring in the data set.

Results and discussion

Metaphor and simile internet frequency counts

We start off by reporting the results on Internet frequency counts, which serve as the basis for our analyses of metaphor-simile preference obtained in the laboratory. A total of 1,004 metaphors and 780 similes were collected via the Google search engine (see Appendix). The mean occurrence per topic–vehicle pair was 11.95 ($SD = 12.52$) for metaphor sentences and 9.29 ($SD = 10.51$) for simile sentences. The mean for metaphors was found to be significantly greater than that found for similes ($T = 409.50$, $p < .01$, $r = .31$), but there was also a strong positive correlation between metaphor and simile frequency counts, $r_s(84) = .84$, $p < .05$. Therefore, when topic–vehicle pairs in metaphor form were frequent, the equivalent similes were also frequent. This strong correlation does not fit the career of metaphor theory prediction that simile forms (e.g., “*THAT FILM IS LIKE A BLOCKBUSTER*”) will become less frequent over time as the vehicle term’s figurative sense becomes more conventional (Gentner & Bowdle, 2008). Instead, the results suggest that a high number of metaphor posts corresponded to a high number of simile posts, with expression types co-occurring rather than similes becoming metaphors over time. We should, in principle, be cautious with this interpretation. The raw data we obtained via Google do not stand for synchronic representations of the expressions, but rather could be contaminated by texts from different periods, thus reflecting diachronically the “career” of a metaphor. However, we see this interpretation as unlikely, for most Google results were from current posts (blogs, informative websites, and other types) rather than from digitized historic texts, and thus reflecting current use. Based on this qualitative assessment of

the data, we think the results support the view that both metaphor and simile of a given topic–vehicle pair are used in consonant, suggesting that similes do not necessarily become metaphors over time.

Predicting metaphor and simile preference

If both metaphor and simile forms of a topic–vehicle pair are equally frequent, what are the factors determining the use of one or another form? In order to address this issue, frequency difference scores were created by subtracting the simile frequency count of a topic–vehicle pair from the metaphor frequency count for that pair. We then correlated these scores with the metaphor preference ratings collected in the present study to examine if an individual's stated preference could predict when a topic–vehicle pair occurred more often as a metaphor on the Internet. A significant correlation was found between the metaphor preference ratings and the frequency difference scores, $r_s(84) = .50, p < .001$. Therefore, those topic–vehicle pairs preferred as metaphors were also those that appeared more often on the Internet as metaphors rather than as similes, suggesting that laboratory-obtained preference ratings from participants are ecologically valid, even in the absence of larger contexts supporting the use of these expressions. Examining aptness and conventionality as predictors of frequency difference scores, we found that aptness was a significant predictor, $r_s(84) = .34, p < .01$, but not conventionality, $r_s(84) = -.04, p = .45$. Correlating these same ratings with the metaphor preference ratings produced a similar pattern of results: aptness was a significant predictor (aptness), $r_s(84) = .61, p < .001$, but not conventionality, $r_s(84) = .04, p = .72$. Therefore, results support experimental studies that find aptness is a better predictor than conventionality for the preferred use of the metaphor form (e.g., Chiappe, Kennedy, & Smykowski, 2003), and extend these results by suggesting that aptness can predict what topic–vehicle pairs will appear as a metaphor more often in realistic utterance contexts, such as Internet posts.

In summary, we found two main results that go against the predictions of career of metaphor theory. First, metaphor expressions and corresponding simile forms were equally frequent. Second, aptness rather than conventionality better predicted when a metaphor would be preferred. In the first case, it could be argued that we are examining a period of time that is too narrow to witness the career of a vehicle. That is, based on the Internet snapshot we obtained, there might not have been enough time to follow a vehicle undergoing a conversion from its occurrence in a simile form to its occurrence in metaphor form. In fact, a closer inspection of time periods and when statements were produced might allow for a better argument against (or for) career of metaphor theory's prediction that similes will be predominant for certain topic–vehicle pairs, but then switch later to a metaphor form after the vehicle is used figuratively on a general basis. The larger issue, however, is that this switch from simile to metaphor is predicted to be related to vehicle conventionality. Instead, aptness surpasses conventionality as a predictor of metaphor preference. This result was obtained twice in the present study: once for ratings collected in the lab, and again for metaphor dominance on the Internet. Ultimately, one must question the strength of the argument when one of its main pillars—vehicle conventionality—is found to be weak, that is, a poor predictor of metaphor preference, as originally proposed by Bowdle and Gentner (2005). We would argue (see also Chiappe et al., 2003) that aptness—the perceived relationship between a topic and vehicle—is the better predictor of metaphor preference both in the lab and on the Internet. Consistent with this finding is also a study showing that when metaphors and similes are apt, rather than simply familiar or conventional, Alzheimer's patients show less difficulty interpreting them (Roncero & de Almeida, 2014b).

Explanations and conveyed properties

While aptness rather than conventionality is a better predictor of metaphor–simile preference, an additional predictor of this preference may be the decision to use an explanation—or its deliberateness. Our findings replicate Roncero et al. (2006), who found that similes are more often followed by

explanations than are metaphors. More specifically, a total of 234 explanations were found with similes compared to only 53 found with metaphors (see Appendix). The mean number of explanations per topic–vehicle pair was 0.63 for metaphor sentences ($SD = 1.23$)—significantly lower than 2.79, the mean found for simile topic–vehicle pairs ($SD = 3.40$; $T = 35.5$, $p < .01$, $r = .64$). Indeed, while only 30% of the simile posts collected (234 out of 780) were followed by explanations, 82% of the explanations (234 out of 287) found were after similes. We would argue this replicated finding reflects the nature of the two expressions. In the case of metaphors, statements are categorical—and often false or else they become tautological (compare “*Fords are cars*” vs. “*FORDS ARE TANKS*”). Rather than suggest a particular property is similar, metaphors might suggest that various salient properties are applicable. In the case of similes, however, a literal comparison between two entities (as in “*X IS LIKE Y*”) might require determining the parameters for the comparison, in the form of explanations. In other words, similes have the pragmatic force of specifying a particular property, and Internet posters may express this property by resorting to simile explanations.

If explanations follow similes more often, is it because newer comparisons require making parameters explicit? We found a significant correlation between simile explanation counts and their familiarity ratings ($r_s = .38$, $p < .05$). We also checked for possible correlations with the aptness and conventionality ratings, but found non-significant correlations for both ratings (conventionality $r_s = .19$, $p = .28$; aptness $r_s = .19$, $p = .11$). Therefore, statements rated the most familiar were the most likely to be written as a simile and followed by an explanation on the Internet, regardless of the aptness of the topic–vehicle pair or vehicle conventionality level. This result supports the argument that people use similes to convey an alternative possible relationship between topics and vehicles (Gentner & Bowdle, 2008; Roncero et al., 2006). Also, the lack of a significant relationship with vehicle conventionality suggests that it is when a particular expression (e.g., “*LIFE IS A JOURNEY*”) becomes well known (i.e., familiar), rather than a particular vehicle term (journey), that people have a greater tendency to produce explanations after similes.

To further examine whether or not people use explanations to express an alternative topic–vehicle relationship, we collapsed different explanations that conveyed similar ideas. For example, the statement “*Lawyers are like sharks because they seek blood*” and “*Lawyers are sharks because they are blood-thirsty*” both employ the property *blood* (or *blood-seeking*) to justify the relation between *lawyer* and *shark*. We then compared properties conveyed by the simile explanations on the Internet to normed property lists (Roncero & de Almeida, 2014a). For every expression, we gave a count of one when the listed idea matched a property stated by at least two participants for the simile expression in the properties list. Overall, 39% of the properties expressed in simile explanations (51 out of 130) were found to express properties that participants had provided for the same expressions in Roncero and de Almeida’s norms. Therefore, when people choose to use an explanation, they often highlight properties low in saliency (i.e., ones that do not easily come to mind). For example, an Internet writer would be unlikely to state, “*The bible is like a sword because it can be used as a weapon*” or “*Be protective*” because such statements would be considered redundant for expressing a literal property of the vehicle. Instead, explanations allow individuals to express more clearly their opinion of a particular topic, and evoke properties that may have otherwise not been entertained in thought by the reader. Key to understanding the nature of the explanations, then, is to examine the properties they highlight. For the most part, explanations highlight novel properties of the relation between topic and vehicle—properties that were not commonly produced in the lab study done by Roncero and de Almeida (2014a). We thus suggest that the decision to communicate a novel meaning is the driving force in the production of these expressions, with explanations being one of the primary means by which readers seek to communicate their intended meanings to readers.

General discussion

Our results raise important questions regarding the nature of metaphors and similes—as they are used on the Internet and investigated in the lab—as well as how these expressions are produced, and

ultimately how they might be interpreted. In closing, we would like to shed light on theoretical issues permeating the literature while also putting in perspective the present results.

We start off by further discussing the role that explanations play in the appreciation of a topic–vehicle pair written as metaphor or simile. We have suggested that writers produce explanations to express novelty. Thus, one question we would like to address is the connection between explanation and the simile form. To this end, let us briefly consider the order in which the communicative act might proceed. Does the writing of a simile lead to the production of a new meaning or, to the contrary, the intention to produce a novel meaning precedes the choice for a simile form? While we can only speculate on possible answers to this question, we think our results can be illuminating, pointing to the primacy of the intention to produce a novel meaning and the subsequent choice for a simile form. The empirical support for this comes from examining the occurrence of explanations. For most topic–vehicle pairs, in metaphor or simile form, one third of the expressions had explanations. If similes, rather than metaphors, were the key trigger for explanations conveying novelty, we would expect to observe a high occurrence of explanations following similes. The relatively high occurrence of explanations following similes is only relative to those following metaphors; when explanations are examined in isolation, they overwhelmingly occur after similes (82% of the time). Therefore, while similes are a poor predictor of subsequent explanations, explanations are an excellent predictor of simile forms. Putting this all together, we suggest that the communicative act—if it aims to convey a new meaning, to cause new thoughts in the mind of the comprehender—begins with a simile and, when needed, it is stressed with a subsequent explanation highlighting novel connections between topic and vehicle.

A question that stands out from the preceding discussion is why simile and not metaphor—that is, why to communicate a new meaning (followed by an explanation) is the simile form preferred over the metaphor form? We think that the answer to this question brings us close to diverse theoretical approaches but also puts us at odds with them. We will elaborate on these connections, even if briefly. At first blush, it appears that the choice for simile rather than metaphor can be accounted for by DMT (Steen, 2008) insofar as this theory proposes that the deliberate use of a figurative expression is intended to “make the addressee look at it from a different domain or space, which functions as a conceptual source.” (Steen, 2008, p. 222).⁴ Along those lines, several authors have suggested that “recontextualization”—the adaptation of a metaphor to novel situations—is a demonstration of how expressions are used deliberately and how they are also expressions of new conceptual domains (see Semino, Deignan, & Littlemore, 2013). Our results suggest that explanations combined with similes more often than metaphors enable these conceptual changes, possibly because similes are taken to initiate a comparison between topic and vehicle in ways that metaphor does not appear to allow (see de Almeida, Manouilidou, Roncero, & Riven, 2010). For example, we have previously argued that metaphors are predication statements that narrow the possible ways in which topic and vehicle relate to each other—namely, by saying that the “*X is a Y*.” In contrast, for similes, there is always a way in which an “*X*” can be “*like*” a “*Y*,” and this open-endedness is better suited for explanations to follow, often with novel, surprising effects. In addition, this idea of comparison processes being triggered by the simile form rather than by a metaphor is compatible with career of metaphor theory, which also suggests that cross-domain mappings are requests for the comprehender (reader or listener) to reconsider the relationship between topic and vehicle (Gentner & Bowdle, 2008). These perspectives, thus, can be taken to be in agreement with the perspective we take, and in particular with the data we present.

Our current hesitation with the noted agreement is that it seems untenable beyond the very idea that our data bring forward: that the choice of expression—simile followed by explanation—seems to

⁴It is important to note that Steen (2008) appears to put both similes (“*X is like Y*”) and metaphors (“*X is Y*”) in the category of metaphors, without making proper distinctions between these forms. We, however, are glossing over this and bringing empirical evidence for the “deliberate” aspect of his theory close to the use of similes, more so than to the use of metaphors.

indicate a deliberate act of linguistic production aiming to convey a novel meaning. As pointed out by Gibbs (2011), deliberateness cannot be easily predicted, not at least based on the choice of words (linguistic markers) interacting with the meanings of topic and vehicle. For Gibbs, metaphor production can be deliberate but also the product of the interaction between many unconscious processes that ultimately yield a particular choice of words. As he points out, it seems impossible to determine whether or not Shakespeare's "*Juliet is the sun*" was deliberate. The diagnostic for deliberateness we have to offer, however, can be seen as promising, at least at par with other pragmatic markers of intentionality: by using explanations, writers make explicit their intention to convey a new meaning.

Similarly, while there seems to be an agreement with regards to the novelty that metaphors and similes allow us to communicate, we are skeptical on whether the relation between topic and vehicle should be conceived in terms of cross-domain mappings, a theoretical perspective that permeates both DMT and Career of Metaphor. We do not think that cross-domain mapping is of special significance for understanding what metaphors and similes do in communicating novel meanings, or how novel meanings are attained with certain expressions. Indeed, the idea that metaphors and similes invite us to entertain new thoughts about the relation between topic and vehicle is supported even by those who do not take "metaphorical meaning" to exist—call them "semantic minimalists" or literalists (e.g., Davidson, 1979; Lepore & Stone, 2010). What sets apart this latter perspective from those who believe in "cross-domain mappings" are two main issues: one methodological and one theoretical. The methodological one bears on whether or not it is even possible to determine the sorts of semantic processes that a given expression engenders beyond what it says literally. Thus, while most would probably agree that metaphors and similes are used to provoke novel ideas in the minds of comprehenders, some would simultaneously argue that there might not be anything systematic about the ways in which processes beyond the literal meaning are attained.

The theoretical issue bears on the nature of semantic representations—what sorts of semantic codes stand for a word or expression. Career of metaphor theory's commitment to domain mappings, for instance, stems from its view that metaphors and similes work as analogies, which in turn are seen as being represented by structural alignments between domains. Although it is beyond the scope of the present article to discuss the details of this theory, suffice it to say that a commitment to domain mappings *a la* career of metaphor also entails a commitment to the hidden predicates that make up the analogies between representations related to the topic and those related to the vehicle.⁵ A possibly more parsimonious view of the process of metaphor and simile interpretation puts the burden of the process on the variables that help guide interpretation but which in no way determines it. Along those lines, we take aptness to be perhaps the most important variable in the analysis of the relation between topic and vehicle without being determinant of the paths that interpretations might take. Furthermore, the linguistic form in which these constituents partake is crucial to understanding the relation between the topic and the vehicle. We and others have argued elsewhere that similes allow for comparisons between terms that are semantically equivalent (i.e., when both topic and vehicle hold their semantic *types*) contrary to copular metaphors, which linguistically might require an operation of *type shifting* (see Glucksberg & Haught, 2006; Partee, 1987; de Almeida et al., 2010; for alternative views on this issue). Thus, the two expressions, it seems clear, differ in their linguistic properties and are generally agreed to also differ in the semantic processes they engender, which can then lead to each form being interpreted differently.

⁵An example of this comes from Bowdle and Gentner (2005) analysis of how a metaphor such as "*Socrates is a midwife*" would be interpreted, with predicate relations computed (or activated) by topic and vehicle yielding something such as (in simplified form), "(HELP (Socrates (PRODUCE (Student, Idea)))" and "(HELP (Midwife (PRODUCE (Mother, Child)) & (GRADUALLY (DEVELOP WITHIN (Child, Mother)))" or, in prose, "Socrates did not simply teach his students new ideas but rather helped them realize ideas that had been developing within them all along." (Bowdle & Gentner, 2005, p. 196).

Conclusions

Regardless of how one conceives of the semantic processes that set metaphors and similes apart, our data shines new light on the comparison between metaphors and similes by suggesting that similes are preferred over metaphors to convey new meanings—usually when followed by explanations. Furthermore, the present study demonstrates that the use of metaphors and similes in realistic contexts, such as the Internet, can be predicted by key parameters of metaphor production and comprehension obtained in the laboratory. Contrary to Aristotle's first observation, metaphors and similes do not differ by just the word "like"; they serve different purposes and their choice is guided by different variables, both in the relatively artificial context of the lab and in the naturalistic context of the Internet. More specifically, although a poster may use a topic–vehicle pair as a metaphor when trying to convey the degree of aptness of a given statement, others will prefer posting the topic–vehicle pair as a simile to prepare the reader for an explanation that conveys an idea one may find surprising.

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References

- Aristotle. (1926). *The art of rhetoric*. New York, NY: G. P. Putnam's Sons.
- Bowdle, B. F., & Gentner, D. (2005). The career of metaphor. *Psychological Review*, 112, 193–216. doi:[10.1037/0033-295X.112.1.193](https://doi.org/10.1037/0033-295X.112.1.193)
- Chiappe, D., Kennedy, J. M., & Smykowski, T. (2003). Reversibility, aptness, and the conventionality of metaphors and similes. *Metaphor and Symbol*, 18, 85–105. doi:[10.1207/S15327868MS1802_2](https://doi.org/10.1207/S15327868MS1802_2)
- Chiappe, D. L., & Kennedy, J. M. (2001). Literal bases for metaphor and simile. *Metaphor and Symbol*, 16, 249–276. doi:[10.1080/10926488.2001.9678897](https://doi.org/10.1080/10926488.2001.9678897)
- Davidson, D. (1979). What metaphors mean. *Critical Inquiry*, 5, 31–47. doi:[10.1086/447971](https://doi.org/10.1086/447971)
- de Almeida, R. G., Manouilidou, C., Roncero, C., & Riven, L. (2010). Three tales of semantic decomposition: Causatives, coercion, and metaphors. In A. Franca & M. Maia (Eds.), *Papers in psycholinguistics* (pp. 172–190). Rio de Janeiro, Brazil: Imprinta.
- Gentner, D., & Bowdle, B. (2008). Metaphor as structure-mapping. In R. W. Gibbs Jr. (Ed.), *The Cambridge handbook of metaphor and thought* (pp. 109–128). New York, NY: Cambridge University Press.
- Gibbs, R. (2008). *The Cambridge handbook of metaphor and thought*. New York, NY: Cambridge University Press.
- Gibbs, R. (2011). Are 'deliberate' metaphors really deliberate?: A question of human consciousness and action. *Metaphor and the Social World*, 1, 26–52. doi:[10.1075/msw](https://doi.org/10.1075/msw)
- Glucksberg, S. (2008). How metaphors create categories—quickly. In R. W. Gibbs, Jr. (Ed.), *The Cambridge handbook of metaphor and thought* (pp. 109–128). New York, NY: Cambridge University Press.
- Glucksberg, S., & Haught, C. (2006). On the relation between metaphor and simile: When comparison fails. *Mind & Language*, 21, 360–378. doi:[10.1111/j.1468-0017.2006.00282.x](https://doi.org/10.1111/j.1468-0017.2006.00282.x)
- Jones, L. L., & Estes, Z. (2005). Metaphor comprehension as attributive categorization. *Journal of Memory and Language*, 53, 110–124. doi:[10.1016/j.jml.2005.01.016](https://doi.org/10.1016/j.jml.2005.01.016)
- Jones, L. L., & Estes, Z. (2006). Roosters, robins, and alarm clocks: Aptness and conventionality in metaphor comprehension. *Journal of Memory and Language*, 55, 18–32. doi:[10.1016/j.jml.2006.02.004](https://doi.org/10.1016/j.jml.2006.02.004)
- Lepore, E., & Stone, M. (2010). Against metaphorical meaning. *Topoi*, 29, 165–180. doi:[10.1007/s11245-009-9076-1](https://doi.org/10.1007/s11245-009-9076-1)
- MacArthur, F., Oncins-Martínez, J. L., Sánchez-García, M., & Piquer-Piriz, A. M. (2012). *Metaphor in use: Context, culture, and communication*. Philadelphia, PA: John Benjamins.
- Partee, B. (1987). Noun-phrase interpretation and type-shifting principles. In J. Groenen, D. de Jongh & M. Stokhof (Eds.), *Studies in discourse representation theory and the theory generalized quantifiers* (pp. 115–143). Dordrecht, The Netherlands: Foris.

- Roncero, C., & de Almeida, R. G. (2014a). Semantic properties, aptness, familiarity, conventionality, and interpretive diversity scores for 84 metaphors and similes. *Behaviour Research Methods*, 47(3), 800–812. doi:[10.3758/s13428-014-0502-y](https://doi.org/10.3758/s13428-014-0502-y)
- Roncero, C., & de Almeida, R. G. (2014b). The importance of being apt: Metaphor comprehension in Alzheimer's disease. *Frontiers in Human Neuroscience*, 8, 973. doi:[10.3389/fnhum.2014.00973](https://doi.org/10.3389/fnhum.2014.00973)
- Roncero, C., Kennedy, J. M., & Smyth, R. (2006). Similes on the Internet have explanations. *Psychonomic Bulletin & Review*, 13(1), 74–77. doi:[10.3758/BF03193815](https://doi.org/10.3758/BF03193815)
- Semino, Deignan, & Littlemore. (2013). Metaphor, genre and recontextualization. *Metaphor and Symbol*, 28(1), 41–59.
- Steen, G. (2008). The paradox of metaphor: Why we need a three-dimensional model of metaphor. *Metaphor and Symbol*, 23(4), 213–241. doi:[10.1080/10926480802426753](https://doi.org/10.1080/10926480802426753)
- Steen, G. (2015). Developing, testing and interpreting deliberate metaphor theory. *Journal of Pragmatics*, 90, 67–72. doi:[10.1016/j.pragma.2015.03.013](https://doi.org/10.1016/j.pragma.2015.03.013)

Appendix

Table A1 lists Preference ratings, difference scores, and frequency counts for topic–vehicle pairs

The preference ratings were obtained using a 5-point scale, with 5 reflecting that the topic–vehicle pair is preferred as a metaphor (e.g., “Alcohol is a crutch”) rather than as a simile (“Alcohol is like a crutch”). Metaphor and simile frequency counts were obtained using Google’s search engine, with difference scores reflecting the production of metaphors over similes (metaphor minus simile). Explanation counts were obtained from the context of metaphors and similes appearing in the Google search results.

TABLE A1. Numerical data collected for topic-vehicle pairs.

Topic–Vehicle	Metaphor preference ratings (max. = 5)	Difference scores	Metaphor frequency counts (max. = 30)	Simile frequency counts (max. = 30)	Metaphor explanation counts	Simile explanation counts
Alcohol–Crutch	3.62	25	28	3	4	0
Anger–Fire	2.29	0	30	30	5	17
Anger–Heart	2.22	0	0	0	0	0
Beauty–Passport	3.01	0	0	0	0	0
Bible–Sword	2.49	–4	0	8	1	5
Billboards–Warts	2.1	0	0	0	0	0
Christ–Door	2.58	4	5	1	1	1
Christians–Salt	1.85	–5	9	14	0	3
Cigarettes–Time Bombs	3.82	–1	0	1	0	1
Cities–Jungles	2.88	10	17	7	0	0
Clouds–Cotton	1.46	8	10	2	0	0
Debt–Disease	2.65	12	18	6	1	4
Deserts–Ovens	2.28	0	0	0	0	0
Desks–Junkyards	2.01	–1	0	1	0	0
Dreams–Water	1.6	0	3	3	0	0
Education–Stairway	3.68	0	1	1	1	1
Exams–Hurdles	3.14	3	4	1	1	1
Eyelids–Curtains	2.33	3	8	5	0	0
Faith–Raft	2.78	16	16	0	0	0
Families–Fortresses	3.08	2	2	0	1	0
Fingerprints– Portraits	2.81	0	0	0	0	0
Friendship– Rainbow	2.17	0	7	7	0	4
Genes–Blueprints	3.38	15	36	21	1	7
Giraffes– Skyscrapers	1.67	0	0	0	0	0
God–Fire	2.1	21	30	9	1	3
God–Parent	2.77	0	30	30	4	8
Greed–Buzzard	3.24	0	0	0	0	0
Health–Glass	1.95	–1	0	1	0	1
Hearts–Closets	2.38	1	2	1	0	1
Heaven–Treasure	3.42	1	1	0	0	0
Highways–Snakes	2.06	0	0	0	0	0
Insults–Daggers	2.84	–8	1	9	1	3
Jobs–Jails	2.42	–1	1	2	0	0
Knowledge–Light	3.6	19	30	11	0	1
Knowledge–Money	3.56	18	30	12	0	4
Knowledge–Power	4.7	16	30	14	0	5

(Continued)

TABLE A1. (Continued).

Topic–Vehicle	Metaphor preference ratings (max. = 5)	Difference scores	Metaphor frequency counts (max. = 30)	Simile frequency counts (max. = 30)	Metaphor explanation counts	Simile explanation counts
Knowledge–River	1.5	–8	4	12	0	8
Lawyers–Sharks	3.09	19	30	11	0	3
Lawyers–Snakes	3.03	10	14	4	0	10
Life–Beach	3.2	5	30	25	1	5
Life–Bottle	2.1	0	2	2	0	1
Life–Dream	2.51	0	30	30	0	3
Life–Joke	3.57	2	30	28	0	5
Life–Journey	3.98	0	30	30	1	7
Life–River	2.36	0	30	30	6	10
Love–Child	2.31	0	9	9	3	7
Love–Drug	2.71	0	30	30	0	5
Love–Flower	2.17	0	30	30	3	10
Love–Gold	3.47	13	30	17	0	4
Love–Melody	3.38	13	30	17	1	2
Love–Rainbow	2.48	0	30	30	3	8
Love–Rose	2.3	0	30	30	1	5
Memory–River	2.18	0	2	2	0	4
Memory–Sponge	1.68	0	3	3	0	1
Men–Fish	1.84	–1	2	3	0	7
Minds–Computers	2.12	6	19	13	3	5
Money–Oxygen	2.23	–11	14	25	3	10
Music–Medicine	2.88	14	30	16	0	5
Obligations– Shackles	2.46	1	1	0	0	0
Peace–River	2.18	–9	3	12	0	0
Pets–Kids	1.91	–22	8	30	0	0
Rage–Volcano	2.38	–1	1	2	0	0
Runners–Torpedoes	1.88	0	0	0	0	0
Salesmen– Bulldozers	2.41	0	0	0	0	0
Schools–Zoos	2.61	1	9	8	0	0
Science–Politics	2.65	5	11	6	0	2
Sermons–Sleeping pills	2.23	1	2	1	0	0
Skating–Flying	1.62	–8	1	9	1	2
Smog–Shroud	2.81	0	0	0	0	0
Soldiers–Pawns	3.11	22	29	7	0	3
Stores–Zoos	2.82	–1	4	5	1	2
Teachers–Sculptors	2.96	5	7	2	0	0
Television–Candy	2	0	3	3	0	0

(Continued)

TABLE A1. (Continued).

Topic-Vehicle	Metaphor preference ratings (max. = 5)	Difference scores	Metaphor frequency counts (max. = 30)	Simile frequency counts (max. = 30)	Metaphor explanation counts	Simile explanation counts
Time-Money	4.55	0	30	30	0	9
Time-Snail	1.99	-1	3	4	0	0
Time-Thief	3.27	7	18	11	0	3
Tongues-Fire	1.9	-2	1	3	0	0
Tree trunks-Straws	1.88	1	1	0	0	0
Trees-Umbrellas	2.18	-3	2	5	1	1
Trust-Glue	2.27	-3	2	5	1	3
Typewriters- Dinosaurs	2.42	4	4	0	0	0
Winter-Death	2.64	13	19	6	0	0
Wisdom-Ocean	2.47	-1	3	4	0	0
Women-Cats	1.88	0	30	30	2	8