# "Hand me the yellow stapler" or "Hand me the yellow dress": Colour overspecification depends on object category

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## Abstract

Two production experiments were conducted to investigate how colour overspecification varies with the object category the referent falls into. We found a positive correlation between how important colour is for objects and how likely speakers are to produce colour overspecification when referring to those objects. We also found that speakers tend to produce colour overspecification when referring to geometrical figures, even though colour is considered of low importance for this category. Following Arts et al. (2011a) and Koolen et al. (2011), we assume that speakers tend to include colour because it is often a highly salient attribute of objects. We argue that on the one hand, colour importance increases colour salience, accounting for the correlation between colour importance and colour overspecification, and on the other hand, the paucity of other attributes of simple figures increases colour salience, accounting for the high proportions of colour overspecification for this category. We claim that variation in colour overspecification across object categories is due to the general cooperative strategy of including salient attributes, which are helpful in referent identification.

## 1 Introduction

When speakers use definite descriptions to refer to objects and individuals, they have to select information about the referent. How speakers do this is currently a major question in research on reference (van Deemter et al., 2012). We present a series of studies that provide insight into this question. We investigate how characteristics of object categories increase the degree to which colour is salient for objects in those categories, and hence the likelihood that speakers select colour when referring to them. For example, are speakers more likely to select colour when referring to a dress, the colour of which is important and therefore presumably salient, than when referring to a stapler? And do they select colour more often when referring to simple figures such as circles and squares, which have no other attributes than colour and shape to attract the attention, than to more complex, real life objects? We focus on colour *overspecification*, which occurs when colour is included even though a unique description of the referent does not require mention of colour in the particular visual context, e.g., 'the red dress' in a context where the referent is the only dress. Although reference has many functions in dialogue, we limit ourselves to the function of referent identification.

Early theories assumed that speakers tend to select those attributes with highest discriminatory power, that is, attributes which distinguish between the referent and most of the other objects in the context, thereby avoiding attributes that are not necessary for the addressee to identify the referent (Ford and Olson, 1975). Experiments, in contrast, have shown repeatedly that speakers do not tend to produce such minimal descriptions of their referents, but often include unnecessary attributes, resulting in overspecification. Moreover, the discriminatory power of attributes does not seem to be a significant factor in the selection process (Gatt et al., 2013; Viethen et al., 2014); instead, speakers have preferences for certain attributes. In particular, speakers seem to prefer mentioning colour, sometimes selecting it even when it has no discriminatory power at all, that is, when all objects in the context share the referent's colour (Koolen et al., 2013). Colour is included more often without need than other attributes, like size (Belke, 2006), material (Sedivy, 2005), and location (Arts

et al., 2011b). That is, overspecification is most often *colour* overspecification.

Why is colour preferred so strongly? The common view is that colour is a salient property of objects (Arts et al., 2011a; Koolen et al., 2011). We can think of several reasons why this might be so. Colour is used to identify objects and to distinguish between objects: it is a basic cue in interpreting our visual image (Treisman and Gelade, 1980). It is also an absolute attribute (Pechmann, 1989; Belke and Meyer, 2002): to determine the colour of an object, it need not be compared to other objects, in contrast to determining whether it is big or small. Eyetracking data suggest that speakers often start to articulate colour adjectives even before looking at other objects, whereas they only include size after detecting a size difference between the referent and another object of the same type (Brown-Schmidt and Konopka, 2011). We suggest, then, that colour is visually highly accessible. It is also linguistically accessible: many languages have a fine-grained colour lexicon, which enables speakers to easily label virtually all colours they can perceive and to use unique labels for a wide variety of colours (Berlin and Kay, 1969). Colour is probably special in being both visually and linguistically more accessible than most if not all other attributes.

It is sometimes argued (Engelhardt et al., 2006) that overspecification is in conflict with Grice's theory of pragmatics (Grice, 1975). After all, the second maxim of quantity should prevent us from producing an utterance that is more informative than is required. This line of argument does not seem to do justice to the Gricean framework. Grice's point is not that we obey to a set of (stipulative) rules; it is that communication is a form of *cooperative* behaviour. If including information into a referring expression is not necessary but nevertheless helpful in the identification of the referent, it is an act of cooperativeness to do so (Arts et al., 2011a). It is a good idea for a cooperative speaker to mention an attribute that is salient to her: such an attribute is likely to be salient to the addressee too, and therefore helpful in referent identification. Salient attributes are not necessarily required for the ultimate purposes of the discourse, but including them does improve the efficiency of the comprehension process. Indeed, it has been found that overspecification can result in shorter referent identification times than minimal descriptions (Mangold and Pobel, 1988; Arts et al., 2011a).

This is not to say that speakers *always* produce the referring expressions that are optimal for comprehension. Language production is constrained by the way our cognitive system is organised, and producing an expression that is optimal for the addressee can therefore be inefficient for the speaker. The smoothness of the exchange may thus improve if an expression is produced that is more efficient from the speaker's point of view and suboptimal but nevertheless understandable from the addressee's point of view. There is evidence that unnecessary information can hinder the comprehension process (Altmann and Steedman, 1988; Engelhardt et al., 2011; Davies and Katsos, 2013) and it is an interesting empirical question in what situations hearers detect overspecification, and what happens when they do. It seems a reasonable assumption, however, that colour is such a helpful cue in referent identification that, in general, addressees do not tend to detect the redundancy of colour overspecification and are usually not hindered by it.

In this paper, we focus on characteristics of objects that contribute to the colour salience of those objects. Of course, characteristics of the visual context contribute to colour salience of objects, too. The colour of a blue object, for instance, is less salient if all other objects in the context are blue. Hence, we would expect speakers to be less likely to produce colour overspecification in such contexts than when the referent is surrounded by objects in different colours, which is indeed what has been found (Koolen et al., 2013). This finding is readily explained in the Gricean framework: it is likely that an addressee detects the redundancy of a colour adjective and is hindered by it when all objects surrounding a blue referent are also blue. Another way in which colour salience is affected by the visual context is when the colour of an object is atypical for this type of object: the colour of a purple crocodile is arguably more salient than the colour of a green crocodile, and we would expect the probability that colour overspecification is produced to increase correspondingly. This too has been confirmed by experimental data (Westerbeek et al., 2014). Again, an explanation in the Gricean framework is easily provided: a hearer who is not told about the colour of a purple crocodile will initially look for a green individual to no avail, and

when he has identified the referent, the question why the speaker did not mention such a salient feature may confuse him even further. Producing colour overspecification is then more cooperative than avoiding it.

If it is true that speakers have a general tendency to include salient attributes – which is generally compatible with cooperative behaviour – patterns in attribute selection may occur that are *not* readily explained in terms of cooperativeness. As has been suggested before, for example, colour is intuitively not equally important for all object categories (Rubio-Fernández, 2011): most people will presumably consider colour more important for fashion items than for construction tools. If higher colour importance increases colour salience, we would expect that speakers are more likely to produce colour adjectives and colour overspecification when referring to a fashionable bag than to an electric drill, all else being equal. Yet, 'red' is probably not more helpful in identifying the referent when it is a bag than when it is a drill. Selecting colour when referring to a bag but not when referring to a drill would thus not be communicatively functional, although the underlying strategy of including salient properties is a manifestation of cooperative behaviour.

The present studies were conducted to explore patterns in colour overspecification that are strictly non-functional, but due to the more general, cooperative strategy to include salient attributes. We do not test the effect of colour salience directly, but we investigate how colour overspecification of objects in various categories is affected by factors which, presumably, contribute to colour salience of those objects. Study 1 is a production experiment conducted to assess whether the tendency to produce colour overspecification is affected by the degree to which colour is *important* (and hence probably salient) for the referent. We compare references to different types of referents: clothes (high colour importance), dinner ware (medium colour importance), and office supplies (low colour importance). A pretest was conducted to establish subjective ratings of colour importance. We hypothesise that the likelihood of colour overspecification increases with colour importance of the referent.

In Study 2, we investigate colour overspecification in reference to a special category of referents: geometrical figures. It is fairly common to investigate referential behaviour experimentally by making participants refer to geometrical figures (Mangold and Pobel, 1988; Arts et al., 2011b). Geometrical figures are easy to manipulate, but they are abstractions rather than real objects. As they have no other attributes than shape and colour to attract the attention, their colour might be more salient than the colour of real life objects whose colour is equally important. We hypothesise that this *paucity* of attributes that may attract the attention is a second factor in colour salience and hence in the production of colour overspecification. In Study 2, we investigate colour overspecification in reference to figures, comparing this category with a category of objects whose colour is equally important.

## 2 Pretest

In order to be able to select the items for Studies 1 and 2, we conducted a pretest to assess to what extent speakers of Dutch judged colour to be important for objects in various categories. To this end, we presented participants with pictures of objects and asked them to judge, on a 7-point scale, how important they felt colour was for the object in question. This procedure enabled us to select four objects in four categories: one with high, one with medium, and two with low colour importance.

### 2.1 Method

#### 2.1.1 Participants

We tested 21 native speakers of Dutch (18 females, 3 males, mean age 22:1 years, range 18-27) at Radboud University, the Netherlands. All were volunteers. They received a small fee for their participation.

#### 2.1.2 Materials

We used 60 black-and-white photographs of objects as stimulus materials, divided into ten categories (objects to draw, write, or paint with, clothes, vehicles, toys, dinner ware, furniture, kitchen utensils, office supplies, cleaning utensils, and geometrical figures) of six objects each. All real life objects were familiar items which are commonly available in a variety of colours and which are easily recognised and named. Additionally, three filler items were included, which did not belong to any of the ten categories.

Each photograph represented one object against a white background. The selection criteria were

that the object should be easy to recognise and that the photograph should be as simple as possible. The original photographs were freely available on the internet. Some were manipulated in Photoshop. Only photos of painted objects were selected, in order to avoid an association with the typical colour of certain materials (such as unpainted wood, which is typically brown). This experiment and all the following experiments were programmed with Presentation software.

#### 2.1.3 Design

All participants judged the colour importance of each of the 60 items. The order of the items was pseudorandomised, with the restriction that items were always followed by at least two items from a different category. Each participant saw the items in a different order.

#### 2.1.4 Procedure

Participants were tested one at a time in a quiet booth. In each trial, participants saw a picture of an object and a 7-point scale below it on a computer screen. Participants were instructed to indicate, by clicking on a point on the scale, how important they felt colour was for the object, where 1 represented 'not at all important', and 7 'highly important'. They were encouraged to follow their intuitions and react quickly. There was no time-out for responding. It took participants about five minutes to complete the task.

### 2.2 Results and selection procedure

We excluded one of the ten categories[1] from further consideration. For the remaining nine categories, the median judgements of colour importance of the items are represented in Figure 1. We selected those items which we expected to be easy to recognise and name for speakers of Dutch, and that were not visually or conceptually similar to another item in the same category (such as a circle and an ellipse). We selected categories with four items that were as homogeneous as possible in their median judgement.

For Study 1, we selected a High Importance category (*Mdn* = 6), a Medium Importance category (*Mdn* = 4), and a Low Importance category (*Mdn* = 2). We selected clothes as High Importance category (trousers, coat, dress, all *Mdn* = 6, and hat, *Mdn* = 5), dinner ware as Medium Importance category (plate, mug, bowl, all *Mdn* = 4, and teapot, *Mdn* = 3), and office supplies as Low Importance category (stapler, pencil sharpener, scissors, all *Mdn* = 2, and ring binder[2], *Mdn* = 3). For Study 2, we selected four geometrical figures (circle, square, triangle, diamond, all *Mdn* = 2).

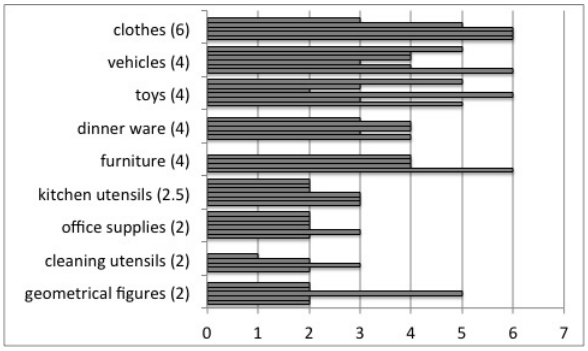


Figure 1: Median judgements of colour importance for the items in each category. The integer in brackets behind the category labels represents the median for that category.

## 3 Study 1: Colour importance

In Study 1, we tested the hypothesis that there is a positive correlation between judgements of colour importance and the amount of colour overspecification, by conducting a production experiment in which participants referred to objects of the three categories of real life objects selected in the pretest.

### 3.1 Method

#### 3.1.1 Participants

We tested 38 participants similar to those in the pretest (33 females, 5 males, mean age 22:10 years, range 18-29). None of the participants in Study 1 had taken part in the pretest. All of them reported not to be colourblind.

#### 3.1.2 Materials

Twelve critical pictures represented the objects selected in the pretest. They were found on the internet and then manipulated in Photoshop to create four colour variants of each picture: bright red, green, yellow, and blue.[3] This procedure thus yielded 48 different pictures altogether. We

[1] The category of objects to draw, write, or paint with was excluded because expressions such as 'the green pen' are ambiguous between a pen filled with green ink and a pen painted green.

[2] Although there was a fourth object with a median of 2, namely the paperclip, we selected the ring binder instead because it was impossible to sufficiently increase the coloured area of the paperclip picture (see section 3.1.2 below).

[3] The pictures in the experiment and the pretest were as similar as possible. We did not use the pictures from the pretest because most of them were not suitable for making good colour variants.

constructed the pictures so that the size of the coloured area was approximately similar across categories[4] (mean number of coloured pixels per picture: 28505 for clothes, 29821 for dinner ware, and 29703 for office supplies).

Filler pictures were taken from the Tarrlab Stimulus Repository[5]. There were three types of filler pictures: sixteen common objects such as bikes and envelopes (Rossion and Pourtois, 2004), sixteen Greebles (Gauthier and Tarr, 1997), and sixteen human faces. Greebles are artificially constructed objects which are complex and highly similar to each other, and therefore difficult to describe uniquely. Paying attention to colour was prevented by changing salient colours into desaturated, inconspicuous ones (common objects) or into tones of grey (Greebles), and by selecting pictures of dark-haired Caucasian people only (human faces).

#### 3.1.3 Design

Participants were randomly assigned to one of three conditions: High Importance, Medium Importance, and Low Importance. Colour importance was manipulated between participants: each participant saw objects from only one of the three categories. Each of the four objects in a category acted as target four times (in four different colours), so that each participant performed sixteen critical trials. They also performed sixteen trials of each of the three types of fillers, yielding a total of 64 trials. The order of the trials was pseudorandomised, with the restriction that each trial was always followed by at least two trials in which the target was of a different type of object. For example, when the target was a dress, the target in the two subsequent trials was never a dress. This was done to prevent participants from producing an adjective for the sake of contrast between the referent and the previous referent. Each participant received the trials in their own unique order.

Target pictures were presented in an array with other objects of the same category. The number of items in an array varied among two, three, four, and six. The objects in the context were never of the same type as the target object. Including colour therefore always resulted in colour overspecification, except for the rare cases where participants did not use a basic-level term (e.g., 'the yellow object' instead of 'the yellow stapler'), which were not included in the analysis. Colours were pseudorandomly distributed over the objects in the array, with the restriction that monochrome displays did not occur. The target could be, but was not necessarily unique in its colour.

Fillers were added to prevent participants from sticking to one syntactic and semantic structure throughout the whole experiment, and from finding out about the aim of the experiment. There were three types of filler trials. Fillers of type A were displays with four pictures of common objects. They were included to elicit referring expressions in which no modifier, such as an adjective or a prepositional phrase, was added to the head noun. Modification was not expected because basic-level terms were always sufficient and none of the pictures had any striking features. Fillers of type B were displays with four pictures of Greebles. They were included to make participants aware that simply naming objects was not always sufficient. Fillers of type C were displays with two human faces, which were either of the same gender or of different genders. They were included to elicit variation in the presence of modifiers within a category: modification was necessary when the two people were of the same gender, but unnecessary when they differed in gender.

#### 3.1.4 Procedure

Participants had to instruct an imaginary addressee to click on one of the pictures displayed in each trial, by finishing the Dutch equivalent of the sentence 'Click on ...'. A cross preceding the presentation of the array indicated the position of the target on the screen. Participants were instructed to avoid referring to the object's location on the screen. It took them about fifteen minutes to complete the task. Otherwise the procedure was similar to that of the pretest.

### 3.2 Results

Each of the 38 participants performed sixteen critical trials, yielding 608 responses. Twenty responses (3.3%) were removed, because the referent was not the target item, because the speaker corrected herself during the articulation of the utterance, or because colour was included without

[4]The results of a pilot study made us suspect a positive correlation between the size of the coloured area of a picture and the probability of colour overspecification.

[5]Stimulus images courtesy of Michael J. Tarr, Center for the Neural Basis of Cognition and Department of Psychology, Carnegie Mellon University, http://www.tarrlab.org/. For some of the pictures we adjusted the colours or we flipped them into a mirror image.

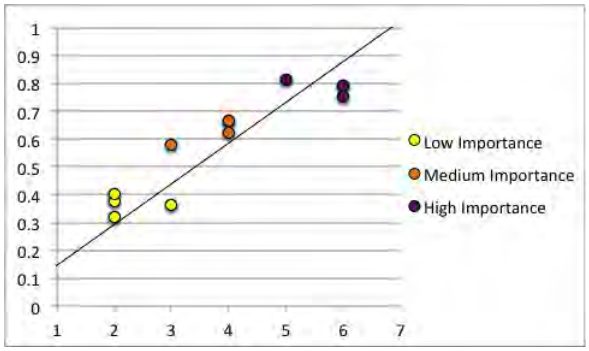


Figure 2: The relation between colour importance and colour overspecification. The median colour importance ratings are plotted on the x-axis, and the mean proportions of colour overspecification are plotted on the y-axis.

this resulting in overspecification. The remaining 588 expressions were annotated as colour overspecified when a colour adjective was included.

We expected that the proportion of colour overspecification would increase with the degree to which colour is considered important for the object. That is, we expected a positive correlation between the colour importance judgements collected in the pretest, and the mean proportions of colour overspecification produced in reference to those items in the present experiment. Indeed, as Figure 2 shows, the proportion of colour overspecification increased with colour importance. The mean proportion of colour overspecification was highest in the High Importance condition ($M = .79, SD = .41$), intermediate in the Medium Importance condition ($M = .63$, $SD = .48$), and lowest in the Low Importance condition ($M = .37$, $SD = .48$). The correlation between the median judgements of colour importance and the proportions of colour overspecification of the items was significant, $\tau = .762$, 95% CI [.335, .929], $p = .001$.

### 3.3 Discussion

We predicted that the salience of an object's colour would increase with the degree to which colour is considered important for that object, resulting in a higher proportion of colour overspecification in reference to the object. Our prediction was borne out by the results: there was a significant positive correlation between colour importance judgements and the mean proportion of colour overspecification in reference to the same items.

Since the pretest indicates that colour importance is considered to be equally low for geometrical figures as for office supplies, speakers are not expected to often produce colour overspecification when referring to figures. However, as pointed out in the Introduction, colour salience is probably not only determined by colour importance, but also by the number of other attributes that matter: if only a low number of attributes may attract the attention, those attributes will increase in salience. The colour of simple geometrical figures might be highly salient because the only attributes of geometrical figures that matter are colour and shape. This possibility was investigated in Study 2.

## 4 Study 2: Geometrical figures

Study 2 was conducted to test the hypothesis that speakers produce more colour overspecification when referring to geometrical figures than to objects of equal colour importance. We elicited references to figures and compared the amount of colour overspecification to the amount produced in Study 1 in reference to office supplies, as the Pretest had indicated that colour is considered to be equally important for the two categories.

### 4.1 Method

#### 4.1.1 Participants

We tested 13 participants similar to the ones in Study 1 (all females, mean age 21:3, range 19-26).[6] None of the participants in Study 2 had participated in either of the previous studies.

#### 4.1.2 Materials, design, and procedure

Critical pictures represented the geometrical figures selected in the pretest. They were created in LaTeX, using the Tikz package, sometimes in combination with Photoshop. Otherwise, materials, design, and procedure were as in Study 1.

### 4.2 Results

Each of the 13 participants performed 16 critical trials, yielding 208 responses, 23 (11%) of which were removed as in Study 1. The remaining 185 expressions were annotated as in Study 1.

The experiment was conducted to test the hypothesis that speakers produce more colour overspecification when referring to geometrical figures than to office supplies. To this end, we compared the proportion of colour overspecification produced in Study 2 to that produced in the Low Importance condition (office supplies) in Study 1.

[6]Two additional participants participated in the experiment but their data were not analysed, because colour was included without resulting in overspecification in more than half of the trials ($n = 1$) or because they did not understand the task ($n = 1$).

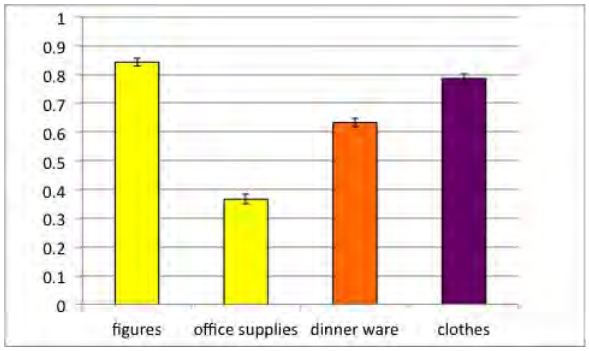


Figure 3: Mean proportions of colour overspecification for geometrical figures from Study 2, and office supplies (Low), dinner ware (Medium), and clothes (High), from Study 1. The error bars represent standard errors.

Figure 3 represents the mean proportions of colour overspecification in reference to geometrical figures and office supplies. For reasons of comparison, the mean proportions for dinner ware (Medium Importance) and clothes (High Importance) from Study 1 are also represented. As hypothesised, the proportion of colour overspecification was higher in reference to geometrical figures ($M$ = .84, $SD$ = .37) than in reference to office supplies ($M$ = .37, $SD$ = .48). The individual participants' proportions of colour overspecification varied a lot within conditions, as the high standard deviations suggest. A Shapiro-Wilk test indicated that the data were not normally distributed ($p$ was below .05 in both conditions). We therefore ranked the data (we report mean ranks, denoted by $MR$) and used non-parametric statistics. A Mann-Whitney test indicated that the difference between geometrical figures ($MR$ = 16.58) and office supplies ($MR$ = 9.12) was significant and that the effect size was large, $U$ = 31.50, $z$ = -2.59, $p$ = .01, $r$ = *-.52*.

As can be seen in Figure 3, the proportions of colour overspecification produced in reference to geometrical figures and clothes (the High Importance condition in Study 1) were very close. A Mann-Whitney test indicated that the difference between figures ($MR$ = 12.27) and clothes ($MR$ = 13.79) was not significant, $U$ = 87.50, $z$ = .60, $p$ = .61, $r$ = .12.

### 4.3 Discussion

Study 2 was conducted to test the hypothesis that speakers are more likely to produce colour overspecification in reference to geometrical figures than to office supplies, even though colour is of equally low importance for the two categories. This prediction was borne out by the data. In fact, the proportion of colour overspecification produced in Study 2 was so high, that is was statistically indistinguishable from the proportion produced in reference to clothes, the High Importance condition in Study 1. The results suggest that the colour of geometrical figures is substantially more salient than the colour of office supplies, which we have argued to be due to the fact that geometrical figures are very simple objects whose only attributes which may attract the attention are colour and shape.

## 5 General discussion and conclusions

We presented a series of experimental studies that investigate the production of colour overspecification in reference to objects in different object categories. In Study 1, we tested the hypothesis that salience of the colour of objects, and hence the probability that speakers produce colour overspecification when referring to those objects, increases with the degree to which colour is considered important for objects. In this experiment, participants referred to objects that we know from a pretest to vary in colour importance: clothes (High Importance), dinner ware (Medium Importance), and office supplies (Low Importance). We found a significant positive correlation between the median ratings of colour importance and the mean proportions of colour overspecification, which is evidence for our hypothesis.

The pretest indicated that colour is considered about equally important for geometrical figures as for office supplies. In Study 2, we investigated whether objects in the two categories nevertheless diverge in how likely speakers are to produce colour overspecification when referring to them. We predicted that the colour of simple geometrical figures is more salient than the colour of office supplies because figures have a low number of attributes that may attract the attention, and that speakers are hence more likely to produce colour overspecification when referring to figures than to office supplies. This prediction was corroborated by the data, which is in line with previous studies in which high rates of colour overspecification were found in reference to geometrical figures (Arts et al., 2011b). Besides, speakers referring to figures produced a very similar amount of colour overspecification to speakers who referred to clothes, to which colour is highly important.

We conclude from Studies 1 and 2 that the like-

lihood of colour overspecification increases when colour is relevant to the referent, and when the referent has a low number of attributes that may attract the attention. We have argued that colour relevance and paucity of attributes both increase colour salience, which triggers selection of colour, even if the resulting colour adjective is redundant.

It might be questioned whether colour importance really increases the salience of an object's colour, as this hypothesis was tested only indirectly. An alternative explanation is that the colour of office supplies is equally salient to the colour of clothes, but that some speakers do not select colour when they are referring to office supplies because the lack of colour importance makes them realise that colour is redundant. We think this unlikely, because out of the seven participants in the Low Important condition in Study 1 who produced colour overspecification at least once, six had not produced it in the first trial, and four kept producing it consistently after the first time they did include colour. That is, if they had realised that colour was redundant in their first trial, why then would they start to include it later in the experiment? We therefore maintain that it is salience of an object's colour that largely determines whether colour will be included in a referring expression. This is not to say that a high degree of salience of an attribute automatically leads to including it. It is perfectly possible, and indeed likely, that speakers evaluate to some degree whether a selected attribute is sufficiently important. However, the fact that colour overspecification is sometimes produced in monochrome contexts suggests that such an evaluation mechanism is not infallible.

The question remains, however, why colour importance would increase colour salience. A possible answer to this question is that when colour is important to an object, speakers will often include the colour of such an object when talking about it even in situations where the intention is not to enable the addressee to identify a referent, but rather to feed his imagination such that he can shape an accurate image of the object in his mind. For example, Bill may tell Ann-Marie about his beautiful new pink shirt, without intending to enable her to pick out the right object as a referent, but just to give her an idea of what his precious purchase looks like. If colour is important to an object, people may therefore be inclined to pay attention to it. Moreover, as the label of an object is often accompanied by a colour term, an association may emerge between the colour term and this label.

As was argued in the Introduction, we claim that the effect of object categories on how likely speakers are to produce colour overspecification is due to a general cooperative strategy: selecting salient attributes generally leads to efficient identification of the referent. We think it unlikely that speakers tend to produce colour overspecification in reference to clothes but not to office supplies because they reckon their addressee will benefit from colour in identifying clothes but not in searching for office supplies. Only empirical evidence can tell us whether colour is more beneficial in identifying clothes than office supplies. As was pointed out in the Introduction, overspecification has been found to be beneficial in some studies but cumbersome in others, and why experimental results diverge at this point is as yet unclear. Addressees may be more likely to notice that colour is redundant when the referent is a stapler than when it is a dress, and hence are hindered by colour overspecification in the former case but not in the latter. Our point is that whether or not this is the case, it is not the reason why speakers select colour more often when referring to dresses than to staplers.

## 6 Conclusions

A series of production experiments showed that speakers are more likely to produce colour overspecification when referring to some objects than to others, apparently regardless of how helpful colour is for identifying the objects. Colour overspecification increased with colour importance in reference to real life objects. It was also high in reference to geometrical figures, even though colour importance is low for this category. We argue that colour overspecification increases with colour salience, and that colour importance of real life objects and a paucity of attributes that may attract attention both contribute to colour salience. We claim that this is due to a general cooperative strategy, because in general, salient attributes are likely to be helpful in the identification process.

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