

From perception to meaning: The role of color and texture in the early stages of conceptual access

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What role do color and texture play in the early stages of conceptual access? Building on Antal and de Almeida's (2023) research, we further investigated the effects of these early visual properties on conceptual processing. In the previous study, two main questions were explored: (1) what *kind* of information is accessed when a referent object is perceived? Are referent objects accessed via the whole object (i.e., at the superordinate-level or at the basic level), or are referent objects accessed via their constituent features (i.e., their high- or low-salient features), and (2) what is the time-course of conceptual access? Their findings suggest that upon seeing a referent such as a dog, participants access superordinate (e.g., ANIMAL) and basic-level information (e.g., DOG) before processing semantic features (*fur, barks*; Antal & de Almeida, 2023). However, the use of simple line drawings in their study could have hindered the perception of salient features. It is well known that color has a high 'diagnosticity' (i.e., an object that has a strong association with a color—such as red for apple) acting as a salient cue facilitating conceptual access. Color may not only assist in the process of accessing a concept but may also give primary access to basic-level concepts (e.g., the orange of a carrot aids its recognition as a carrot; Bramão et al., 2012; Rossion & Pourtois, 2004). The present study explored the same main questions as Antal and de Almeida's (2023) study but with the introduction of color and texture in the object stimuli, aiming to investigate the role these features might play in conceptual access. We also assessed whether employing an 'ultra-rapid' stimulus presentation (i.e., 30 ms) would yield a superordinate effect, a finding observed in prior studies (VanRullen & Thorpe, 2001; Macé et al., 2009). We employed a masked picture-word congruency task, with a dichoptic presentation of pictures (e.g., dog) and words representing different object properties (e.g., dog, animal, bark, fur). Stimuli were presented for 30, 50, 190, and 390 milliseconds. Upon the picture-word presentation, participants decided whether the picture and word were related. Our results revealed that introducing color and texture actually hindered participant accuracy. Contrary to studies suggesting that color facilitates conceptual access at the basic-level (Rossion & Pourtois, 2004), our findings showed no such difference in comparison to simple line-drawings. Given the improved performance with less detailed objects (i.e., the simple line drawings), it appears that the object's shape, rather than its color, might be what's crucial in facilitating the process of conceptual access (Elder, 2018). However, further studies focusing solely on object contours would be required to confirm this possibility. Furthermore, and in line with the previous study, our data suggests that we initially access whole-object information at the basic-level (e.g., DOG) and superordinate-level (e.g., ANIMAL), with features analyzed later in conceptual processing. These results are predicted by theories that propose non-decompositional early access to concepts (Fodor, 1998; Fodor & Pylyshyn, 2015), rather than feature-based access (Rosch, 1978; Moss et al., 2007). Our findings provide insights into the nature of conceptual information and the time course of conceptual access.

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