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Vidic and Haaf (2004) questioned the idea that infants use head information to categorize cats as distinct from dogs (Quinn & Eimas, 1996) and argued instead that the torso region is important. However, only null results were observed in the critical test comparisons between modified and unmodified stimuli. In addition, a priori preferences for the paired test stimuli were not assessed, thus leaving open the possibility that novel category preferences for unmodified stimuli could have been blocked by spontaneous preferences for modified stimuli. Moreover, only a single cat-dog pairing and set of pig parts were used as test stimuli, thereby raising the issue of whether the infants could have been responding to idiosyncratic featural differences between particular exemplars rather than features diagnostic of whole categories. The evidence does not support the conclusion that the torso is important for infants’ categorization of cats versus dogs.

Investigations conducted with looking time procedures over the last dozen years have suggested that young infants possess abilities to organize objects into perceptual categories that have conceptual significance for adults (Quinn, 2002). For example, 3- to 4-month-olds familiarized with realistic color photographs of cats will generalize responsiveness to novel cats, but display differential responsiveness to birds, dogs, horses, and tigers. These results indicate that the infants can form a category representation for cats that includes novel cats, but excludes birds, dogs, horses, and tigers. This work suggests that the initial construction of category representations is not dependent on the acquisition of language, logic, or instruction.

Accompanying the empirical demonstrations of categorization abilities in infants have been inquiries into the types of information used to form

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the underlying category representations. The young age of the infants and the fact that the stimuli are presented as silent, static, noninteracting photographs lead one to infer that perceptual attributes that can be detected from the surfaces of the stimuli are the likely basis. Thus, infants might categorically separate cats from birds on the basis of the number of legs, cats from horses on the basis of overall shape, and cats from tigers on the basis of surface markings. 

An issue of interest has been how young infants categorically separate animal species that bear a close resemblance, such as cats and dogs. The two species are similar in the presence of fur, coloration, number of legs, nature of facial features, and overall body shape. One strategy that has been used to identify the cue (or cues) that infants may use to form a particular category representation is to demonstrate that infants form the category representation when the cue is present, but do not form the category representation when the cue is absent. Using this strategy, Quinn and Eimas (1996) reported that infants formed a category representation for cats that excluded dogs when the exemplars presented during familiarization and test trials displayed only information from the head region (minus the body region), but did not form the category representation when the exemplars displayed only information from the body region (minus the head region). The same result was obtained when infants viewed silhouettes of the images (Quinn, Eimas, & Tarr, 2001), indicating that head shape is sufficient to support the categorical partitioning. In addition, in another study, infants were familiarized with whole cats or dogs and tested with hybrid stimuli: a novel cat head on a novel dog body versus a novel dog head on a novel cat body (Spencer, Quinn, Johnson, & Karmiloff-Smith, 1997). The infants preferred the test stimulus with the novel category head. These studies suggest that the head region of the stimuli allows infants to form individuated category representations for cats and dogs.

Vidic and Haaf (2004) recently reported an experiment questioning whether the head region is the basis for infants' categorization of cats versus dogs. Four-month-old infants were familiarized with either cats or dogs, and then tested with a novel example of the novel category paired with either: a novel example from the familiar category, a novel example from the familiar category with face replaced by the face of a pig, a novel example from the familiar category with head replaced by the head of the pig, and a novel example from the familiar category with torso replaced by the torso of the pig. Infants familiarized with cats preferred the dog over novel cat, whereas infants familiarized with dogs did not prefer the cat over the novel dog, an asymmetrical result previously reported by Quinn, Eimas, and Rosenkrantz (1993) and attributable to the fact that dogs are more variable as a stimulus class than cats, causing the cats to be subsumed by a more inclusive representation of dogs (Mareschal, French, & Quinn, 2000). Further analyses of Vidic and Haaf (2004) were limited to the cat familiarization condition. The findings were that no reliable preference emerged for the dog when the dog was paired with
any of the modified cat stimuli. The conclusion was that no body part has privileged status in infants' categorization of cats versus dogs, and that "4-month-old infants used the body region to distinguish between cats and dogs" (Vidic & Haaf, 2004, p. 193).

One can question whether Vidic and Haaf's (2004) results undermine the argument of Quinn and Eimas (1996) that head information is relied on to a greater extent than body information to categorize cats versus dogs. To defeat this argument, and to make the counterargument that no part of the animal stimuli holds a privileged status for categorization, it would be necessary to show that body information is at least equal to head information as a diagnostic cue for categorization of cats versus dogs under some set of experimental conditions. However, no positive evidence was offered that any part of the stimulus (other than the animal as a whole) could be used as a basis for categorization. The conclusion that no body part holds a privileged status in categorization was based on null results (and with small cell size of $N = 8$). None of the critical comparisons between the modified and unmodified test stimuli yielded an above-chance novel category preference, thereby raising questions about the advisability of comparing responsiveness to modified versus unmodified stimuli for assessing categorization.

Vidic and Haaf (2004) were also unclear about the rationale for introducing a stimulus from a third category (i.e., the pig) as a means for investigating the information that infants use to separate the categories of cats and dogs. Pigs differ from both cats and dogs in a number of ways including head/face, body shape, surface texture, and coloring. The introduction of novel information from this third category may have distracted the infants (i.e., interfered with the preference for a dog after familiarization with cats). However, demonstrating that novel sources of information can interfere with infants making a particular category distinction is not equivalent to demonstrating that infants can use these sources of information as a basis for category formation. For example, Spencer et al. (1997) reported that competing information from a novel category body could reduce (although not eliminate) infant reliance on the head region in categorizing cats versus dogs, but offered no positive evidence that body information could be used as a basis for the categorization. Likewise, Quinn and Eimas (1996) and Quinn et al. (2001) reported that infants process body information from the cat and dog exemplars. Their infants were able to discriminate one cat body from another (and one dog body from another). However, the body information was not diagnostic with respect to the category distinction. The point here is that showing that body information is processed by infants is not the same as showing that body information can be used by infants to separate the categories.

As mentioned, 3 of the 4 test comparisons (all that yielded null results) involved a modified animal that was the novel exemplar from the familiar category versus an intact animal that was the novel exemplar from the novel category. Conceivably, the modified animals were strange
looking and could have commanded infant attention, thereby interfering with the preference for the intact animal. By comparison, all of the test pairings used previously by Quinn and colleagues involved equivalently altered stimuli (e.g., cat body only vs. dog body only or cat head and dog body hybrid vs. dog head and cat body hybrid). Moreover, Vidic and Haaf (2004) did not conduct a priori preference tests to examine infants’ spontaneous preference for the modified versus unmodified test stimuli in the face-, head-, and torso-replaced conditions. If the infants spontaneously preferred the modified over the unmodified test stimuli, then any novel category preference for the unmodified test stimulus could have been blocked by a spontaneous preference for one or more of the unmodified test stimuli.

Another methodological point is that Quinn and Eimas (1996) used large stimulus sets \(N = 18\) to represent the categories of cats versus dogs, and each infant was familiarized with a random selection of the instances and tested with novel instances from the familiar and novel categories that were also randomly chosen. This aspect of the experimental design ensures that any novel category preferences are not limited to a unique pair of stimuli. Vidic and Haaf (2004), however, used only a single cat and dog as test stimuli for all infants. This procedure raises the question of whether the infants might have responded to featural differences that were idiosyncratic to the two exemplars tested, but not necessarily diagnostic of membership in categories with a range of inclusiveness. It also introduces the possibility that the one reliable novel category preference reported in Vidic and Haaf (2004), that for the novel dog in the whole animal condition, was based on a spontaneous preference for a particular dog over a specific cat. In addition, only a single pig exemplar was used to derive the substitute parts for the modified test stimuli, which creates further concern that infant responding could have been based on exemplar-specific, rather than category-level, information.

In summary, because (a) only null results were observed among the critical comparisons involving the unmodified novel category test stimulus and modified familiar category test stimuli, (b) a priori preferences among the test stimulus pairings were not assessed, and (c) only a single cat versus dog exemplar pair was presented in the crucial comparison between the novel exemplar from the familiar category and the novel exemplar from the novel category, the results of Vidic and Haaf (2004) do not support the major conclusion that torso information is used by infants to categorize cats as distinct from dogs. At best, the Vidic and Haaf (2004) results could be interpreted as evidence that infants process the body information from the animal stimuli, but this was already known from previous reports (Quinn & Eimas, 1996; Quinn et al., 2001; Spencer et al., 1997) and is not equivalent to showing that infants use body information as diagnostic information for the categorical partitioning. Positive results reported in the three prior papers (Quinn & Eimas, 1996; Quinn et al., 2001; Spencer et al., 1997) and obtained with different methodologies (part occlusion and hybrid test stimuli) continue to support the position that head information is the basis for infants’ categorization of cats and dogs.
References


