Deja vu all over again: re-re-visiting the conceptual status of early word learning

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Abstract

In their most recent critique of our work, Smith and Samuelson (2006) focus largely on imagined differences between our theoretical position on early word learning (and the shape bias) and their own. They also voice two minor expositional complaints. We attempt to redirect attention to the one clear difference between our theoretical positions regarding the fundamental contribution of conceptual knowledge to acquisition and reiterate how our data speak to this debate. We place Smith and Samuelson’s current critique within the context of previous exchanges and underscore our hope that interested readers will consider for themselves the issues at stake and the empirical evidence informing them.
We begin our response with a strong sense of deja vu. With this writing, the number of times that we have been called upon by Linda Smith and her colleagues to respond to their interpretation of our work on the ‘shape bias’ (n = 3) (Booth & Waxman, 2003a; Booth & Waxman, under review) surpasses the number of articles that we have written on the topic (n = 2) (Booth & Waxman, 2002b; Booth, Waxman, & Huang, 2005). And although attention can be flattering, this intensity of attention is curious, especially because our work on the ‘shape bias’ represents only a small component of our broader research program, the goal of which has always been to discover the relation between word learning and conceptual organization in infancy and to trace the trajectory of this relation across development and across languages. Rather than focusing narrowly on the ‘shape bias’, we have sought to engage the work on this topic with the broader developmental issues.

If Smith and Samuelson’s (2006) current critique moved beyond the previous ones – raising new theoretical issues, bringing new insight into the existing empirical evidence, or integrating the themes raised in the earlier exchanges - we could respond substantively. Unfortunately, however, this is not the case. Therefore, we take this as an opportunity to place the current critique within the context of those previous exchanges and to underscore our hope that interested readers will consider for themselves the issues that we have addressed empirically and the exchanges of commentary that followed (Booth & Waxman, 2002b, 2003a; Booth & Waxman, under review; Booth et al., 2005; Smith, Jones, Yoshida, & Colunga, 2003; Smith & Samuelson, 2006).
Our first foray into the nature of the ‘shape bias’ appeared as a brief article in Cognition (Booth & Waxman, 2002b). Our goal was to document the role of conceptual information in early word learning. We presented 3-year-old children with novel target objects, labeled with novel count nouns (e.g., *dax*). We varied the conceptual status of these objects by using a brief vignette to describe them either as animate objects (e.g., “…has a mommy and daddy who love it very much”) or as artifacts (e.g., “…was made by an astronaut to do a special job on her spaceship”). We then examined children’s extension of the new words. When the objects were described as artifacts, children extended on the basis of shape alone. But when the *very same* objects were described as animate objects, children extended on the basis of both shape and texture. Moreover, when we placed eyes (a strong perceptual cue to animacy) on the objects, but described them with the artifact vignette, children’s extension patterns were consistent with the vignette (i.e., they extended on the basis of shape alone). We concluded that the conceptual status of a labeled object influences early word learning, and does so even in the face of conflicting perceptual cues.

This finding served as the impetus for the first critique (Smith et al., 2003), the main point of which was an attempt to re-characterize our vignettes as linguistic information, and to deny their conceptual import. This re-characterization, however creative, is wrong. To be sure, we conveyed the vignettes linguistically: the experimenter talked and the children listened. But the information in these vignettes was replete with conceptual content that cannot be reduced to simple grist for an associative mill (see Booth and Waxman (2003; under review) for further discussion). Any current theory of early word learning – including the ALA – must be able to account for the pervasive

Our second empirical contribution pertaining to the ‘shape bias’ appeared in Developmental Psychology (2005) and is the focus of Smith and Samuelson’s current commentary. Having demonstrated the influence of conceptual information in early word learning (Booth & Waxman, 2002b), our interest was to move forward to identify the antecedents of that phenomenon. Turning our focus to a much younger population of word learners, we demonstrated that for infants as young as 18 months of age, the meaning of a novel noun is mediated by the conceptual status of the individuals being named. Infants extended novel nouns differently in the animate and the artifact vignette conditions. This sensitivity to the distinction between animates and artifacts revealed that conceptual information permeates early word learning, even in infancy. This result challenged the notion that expectations in word learning (e.g., the ‘shape bias’) emerge late in the process. Moreover, because our participants were so young (and had such small productive vocabularies), the results challenged the ALA claim that the ‘shape bias’ is built upon the bedrock of correlations that children compute from their own productive lexicons. Our hope was that this new evidence would spark interest in the larger developmental window in which word-learning unfolds.

We were therefore quite hopeful at the next juncture, when Samuelson invited us to contribute a commentary to a special issue of Developmental Science. The goal of this
special issue was to move the field toward rapprochement, using recent research on the ‘shape bias’ as a touchstone for considering broader questions regarding mechanisms and theories of development. The idea was for four different research teams (including Samuelson & Horst; Bloom, Diesendruck & Markson; Smith & Colunga; and ourselves) to submit a paper to which the others would respond. We contributed the more recent of our two papers for consideration (Booth & Waxman, 2005). In crafting our commentary for this collective effort, we considered openly and carefully the points of convergence and divergence among the theories and evidence. We discussed our inclusive developmental perspective, pointing out the ways in which both perceptual and conceptual information is required to support the establishment of a lexicon. We considered the role of statistical learning, the developmental status of constraints on word learning, and specifically outlined our impressions of the strengths and limitations of connectionist models and training studies for developing theories of early word-learning (Booth & Waxman, under review).

To our surprise, while we were in the midst of composing our contribution for Samuelson’s special issue, and while Smith and Samuelson were presumably each composing their own, they had also joined forces to co-author the critique to which we now respond. Unfortunately, this critique brings no new substance to the table. It does not engage seriously the new evidence that we offered, the issues raised in our earlier exchange, or the broader theoretical implications of our work for theories of word learning. Instead, this most recent critique continues to misrepresent our theoretical position, ignoring the core theoretical division between our positions while highlighting divisions that don’t exist. From our perspective, there is but one clear difference between
our positions regarding the ‘foundational nature of cognition itself’ (Smith & Samuelson, 2006, p. 11), and that difference concerns the fundamental role of conceptual information in acquisition. This division reflects a deep and abiding controversy in the field as a whole regarding the relative contributions of perceptual and conceptual information to cognition and its development (Baillargeon, 2004; Carey & Markman, 1999; Gelman & Medin, 1993; Leslie, 1988; Mandler, 1988; Spelke, 1991). Instead of engaging this controversy, Smith and Samuelson (2006) attempt to divert attention to three other imagined differences between our positions. First, Smith and Samuelson (2006) imply that we take knowledge to be represented in a unitary and fixed manner. We never made this claim. Second, they suggest that we see ‘cognition as sequestered from processes of perceiving and acting (Smith & Samuelson, 2006, p. 2).’ We have never taken this perspective. Third, Smith and Samuelson (2006, p. 2) report that we believe that the ‘mechanisms that underlie [the ‘shape bias’] are conceptual knowledge and not attentional learning.’ We have certainly argued that conceptual information plays an important role in word-learning and the expression of the shape bias, but we have also embraced a role for attentional learning (Booth & Waxman, 2003b; Booth & Waxman, under review; Waxman, 2002; Waxman & Lidz, in press).

Smith and Samuelson (2006) raise only two new concerns in their critique – both of them at the level of expository style. First, they devote considerable attention to our use of a quote. In fact, we selected this quote from the lead sentence of the general discussion in one of this group’s most influential papers (Landau, Smith, & Jones, 1998). We did so because we felt that it reflected fairly, succinctly and compellingly the ALA position. Yet Smith and Samuelson (2006) protest, arguing that this sentence was written
as ‘a strong benchmark against which to discuss experimental results’ (p. 8). We agree entirely, and it is for this reason that we selected it. This type of protest is reminiscent of our first exchange. In Booth and Waxman (2002b), we appealed to another influential paper, entitled ‘Naming in young children: A dumb attentional mechanism? (Colunga & Smith, 2004; Smith, Jones, & Landau, 1996). Smith et al (Smith et al., 2003) protested, arguing that our use of their terminology (i.e., ‘DAM’ for ‘dumb attentional mechanism’) constituted a misrepresentation of their position, but they continue to use it themselves (see Colunga and Smith, 2004). Rising above these expositional concerns, there is a larger issue: In our work on the ‘shape bias’, we have been at pains to review the literature thoroughly and to engage previous work actively and honestly. It is precisely for these reasons that we have chosen to cite directly from the work of Smith and her colleagues.

Second, Smith and Samuelson devote considerable attention to a parenthetical comment, which states, ‘(see Diesendruck & Bloom, 2003, & Graham & Poulin-Dubois, 1999, for failures to replicate)’ (p. 493). To be honest, this was simply an editorial oversight. The phrase ‘failures to replicate’ should have been deleted, as is evident from the body of the text, in which we more accurately described the results in question as ‘yet to be replicated in other labs.’ We stand by the body of our text, and regret the editorial oversight in the subsequent parenthesis.

Regrettably, as we close this third response, we are reminded of our first. There, we confessed to finding it difficult to interpret Smith et al.’s (Smith et al., 2003) commentary as anything but dismissive. Nothing has changed with this latest exchange (Smith & Samuelson, 2006). So, with a strong sense of déjà vu, we emphasize again that
the evidence reveals that young learners seamlessly integrate perceptual, linguistic and conceptual information as they acquire new concepts and the words to express them. It is time to treat this evidence judiciously and to engage the issues seriously. If we are to move the field forward, then it is time to develop theories that take into account young word-learners’ sensitivity to these various sources of information, and to the interactions among them.
References


