The Hierarchical Competing Systems Model Provides a Process Account of Social Decision Making

We applaud Richardson, Mulvey, and Killen's [2012] application of the hierarchical competing systems model (HCSM) to models of social decision making. The HCSM is a framework of the development of executive function that was formulated to account for patterns of behavior in infant and toddler search tasks. However, the principles of the model are relevant across a wide range of domains throughout the lifespan [Marcovitch & Zelazo, 2009]. According to the HCSM framework, behavior (or decision making) results from the joint contributions of a habit system (appropriately relabeled 'experience' by Richardson et al.) and a representational system. In turn, the act of reflection – defined as representing a representation – strengthens the influence of the representational system to the point where it can override the influence of the habit system. Importantly, reflection is not always needed for an individual to act in a novel, appropriate fashion (i.e., this can occur through the influences of unreflective representations). That said, the presence of reflection allows for the modification of behavior (or preexisting rationales for decision making) based solely on endogenous processes, even when these endogenous processes can be triggered from environmental events. In short, we argue that unexpected changes in the environment have the potential to initiate reflection, provided that the individual is attentive, capable of processing the nature of the disturbance, and motivated to reconcile the situation.

Richardson et al. [2012] applied the HCSM successfully to the social domain theory by illustrating convincingly that in contexts in which children are attentive and capable, reflection can be elicited from unexpected environmental cues in an effort to override prepotent modes of response. It is through this mechanism that moral judgment develops and more sophisticated lines of moral reasoning can replace immature ones that were established previously. This application is entirely consistent with the intended purpose of the HCSM framework, and the integration of the two theories has the potential to set the stage for refinement of social judgment theories that lack cognitive mechanisms that account for development and cognitive developmental theories that do not account for the social context of the individual.

One challenge in studying social judgments from a habit/experience perspective is to identify the default assumptions that children bring to bear on specific social judgments or decisions; in some cases, these assumptions are evident, but they can also be quite elusive and are likely to be context-dependent. Identifying the underlying assumptions, and documenting how these assumptions are likely to change both with age and experience, will enable us to understand what is prototypic. Indeed, it is the counter-examples to these prototypes that may determine conditions under which children are expected to invoke the representational system.

We have conducted research on the nature and emergence of young children's global personality judgments (e.g., How do young children decide that a person is 'nice' as opposed to 'mean'?). One of the major factors that guide such social decisions is behavioral frequency (i.e., number of trait-relevant behavioral exemplars). Research indicates that, at a very early age, children are sensitive to frequency information and use it to learn about the physical and social world. For example, frequency detection is considered to be a major mechanism implicated in infants' ability to predict future actions [Paulus et al., 2011]. It is also clear that preschoolers rely on frequency to make personality judgments. For example, children are more likely to generate a relevant trait attribution about a person after receiving several behavioral exemplars compared to only one behavioral exemplar [Boseovski & Lee, 2006, exp. 2]. On some accounts, the expectations that are formed based on this type of statistical evidence are used by 'default' and do not necessarily involve reflection [Paulus et al., 2011]. Thus, the use of frequency information can be described as habit-based. Of course, personality judgments are not based on frequency information alone. Consistent with Richardson et al.'s [2012] discussion of moral judgments, intentionality information is also critical to personality judgments [Malle, 2004]. Although there is ample evidence to suggest strong intention understanding in infancy [e.g., Sommerville, Woodward, & Needham, 2005], one challenge for older children is to integrate intention information with behavioral frequency information when making personality judgments. This ability is nascent and requires reflection, particularly when the two cues are at odds (e.g., high frequency behavior that on its own implies a particular trait, but that is accidental rather than intentional).

An additional challenge for young children's personality reasoning concerns biased processing of information irrespective of cues such as frequency and intention. By middle childhood, children exhibit a default positivity bias wherein they give greater weight to positive than negative information when making personality judgments about others; this is thought to be socially mediated [Boseovski, 2010]. For example, children disregard negative information in their judgments about other people [Boseovski & Lee, 2008] and expect positive behavior when given neutral or negative intention information [Boseovski, Chiu, & Marcovitch, 2012; Grant & Mills, 2011].

Consistent with Richardson et al. [2012], we interpret this positivity bias to be an instance of an experience-based assumption that will guide the decision making of young children unless they are able to invoke the appropriate reflection to override these tendencies. For example, Boseovski and Lee [2006, exp. 2] found that children needed to observe 5 negative behavioral exemplars before they were likely to make a judgment of 'mean', whereas they only needed to witness one positive exemplar before attributing niceness to a character. Using the joint framework suggested by Richardson et al., we would argue that children expect characters to behave nicely to one

another. The expectation is sufficiently strong in that it takes 5 violations of this expectation before children are forced to reflect upon the situation and modify their judgments accordingly.

Like the authors, we also take the view that the representational system is strengthened by maturation and individual differences in EF (e.g., working memory, inhibitory control). For example, children's personality reasoning degrades substantially in situations in which they have to monitor the behavior of a protagonist toward several different recipients rather than only one recipient over time [Boseovski & Lee, 2006, exp. 1]. Preliminary evidence from our laboratory also reveals that children's performance on measures of working memory and goal maintenance are related directly to the likelihood of overriding their default positive social judgments. In addition, in a paradigm in which young children were asked to choose between the negatively valenced testimony of an expert informant as compared to the positively valenced testimony of a novice informant concerning the characteristics of a novel animal, a significant positive correlation emerged between parent-reported inhibitory control and selection of the negative expert informant over the positive novice informant. Accordingly, we agree with the authors that executive functioning skills must be studied within the context of social judgments and decision making.

In sum, we regard the integrative perspective of Richardson et al. [2012] to be a critical step toward understanding children's social decision making. As research from our labs and others continues to accumulate, greater specifications of the proposed process model will enable us to uncover the complexities involved in the development of social and moral reasoning.

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