

## Choice-induced preference: A challenge for contrast

Commentary on [Zentall](#) on *Cognitive Dissonance*

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**Abstract:** In his target article, Zentall asks: “to experience cognitive dissonance is it necessary for one to have conflicting beliefs or even beliefs at all?” He then argues that a simple behavioral process, the Within Trial Contrast Effect, may be sufficient to explain observed cognitive dissonance effects in nonhuman animals and possibly humans as well. We agree with Zentall that this effect is sufficient to explain many reported cognitive dissonance effects in nonhuman animals, but question its sufficiency for primate behavior (both monkeys and humans).

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Cognitive dissonance in animals is generally studied using one of three approaches: (1) justification of effort, (2) induced compliance, and (3) choice-induced preference (Harmon-Jones & Harmon-Jones, 2008). We agree with Zentall that a Within Trial Contrast mechanism can explain findings from the justification of effort and induced compliance paradigms. However, we believe that the Within Trial Contrast Effect (WTCE) may not suffice to explain choice-induced preference.

Choice-induced preference refers to a phenomenon where the act of choosing between equivalent items produces a subsequent decrease in preference for the rejected item (Izuma & Muramya, 2013; Zentall, 2016). Similar to the justification of effort and induced compliance paradigms, choice-induced preference is thought to reflect a dissonance resolution process that involves a post-choice reevaluation of beliefs and actions driven by a drive for consistency (Sharot et al., 2010). Some authors have raised methodological concerns about the means used to measure choice-induced preference (Chen, 2008; Chen & Risen, 2010). Nonetheless, a variety

of follow-ups with new controls have since validated the general effect (Egan et al., 2010; Johansson et al., 2013; Coppin et al., 2014; Lou & Yu, 2016).

In Zentall's explanation, the WTCE occurs when stimuli are reinforced after an aversive event that produces a greater reward contrast, and thus greater perceived value for the stimulus. The more aversive the event, the greater the contrast and by extension the greater the perceived value for the stimulus. As Meindl (2012) notes, WTCEs function as a type of motivating operation by which an antecedent event can alter the efficacy of a proceeding stimulus as a reinforcer.

The problem with the WTCE as an explanation for choice-induced preference is that there is no aversive event that occurs within a typical study of choice-induced preference. One could argue that the act of choosing functions as the aversive event and that the subsequent choice ends it. However, if this were the case, only the chosen item should undergo a change in preference or value as it is the stimulus that follows the aversive event of choosing. Yet, experimental tests of choice-induced preference show changes in valuation of the rejected stimulus (Izuma & Murymama, 2013). Thus, choice-induced preference is difficult to explain using WTC. Instead, a belief-based drive for consistency appears to be the most parsimonious explanation (Harmon-Jones & Harmon-Jones, 2008).

Furthermore, we question the sufficiency of WTCEs in choice-induced preference due to the lack of evidence in animals outside the primate order. If choice-induced preference were to arise out of simple behavioral processes, one would expect it to be ubiquitous in nonhuman animals similar to research on justification of effort in rats, pigeons, and humans (Lydall, 2010; Zentall, 2016). However, animal evidence has instead highlighted the uniqueness of choice-induced preference within humans and monkeys.

Only three studies have demonstrated choice-induced preferences in nonhuman animals (Egan et al., 2007, 2010; West et al., 2010). In a study of capuchin monkeys, Egan et al. (2007, 2010) demonstrated choice-induced preference effects that replicated across control conditions. Using a phylogenetic approach, West et al. (2010) examined choice-induced preferences across four taxonomic groups (bears, parrots, monkeys, and apes). Like Egan et al. (2007), West et al. found choice-induced preferences in monkeys but not the other groups.

We find the exclusivity of choice-induced preferences to studies examining humans and monkeys interesting, as it addresses Zentall's closing call for procedures to differentiate more cognitive from behavioral accounts of cognitive dissonance in order to better understand animal minds. On one hand, the finding of choice-induced preferences in monkeys may indicate a cognitive process shared with humans beyond simple behavioral processes. If so, then it provides evidence that monkeys are capable of maintaining beliefs and experiencing conflict between them. However, the surprising failure to detect choice-induced preference in apes by West et al. (2010) casts doubt on this interpretation and raises questions as to whether the way apes and monkeys experience dissonance is similar to the way humans do. Answering this question will require careful consideration of the social and behavioral factors that influence choice-induced preferences.

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