Relational information moderates approach-avoidance instruction effects on implicit evaluation

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ABSTRACT

Previous research demonstrated that instructions to approach one stimulus and avoid another stimulus can result in a spontaneous or implicit preference for the former stimulus. In the current study, we tested whether the effect of approach-avoidance instructions on implicit evaluation depends on the relational information embedded in these instructions. Participants received instructions that they would move towards a certain non-existing word and move away from another non-existing word (self-agent instructions) or that one non-existing word would move towards them and the other non-existing word would move away from them (stimulus-agent instructions). Results showed that self-agent instructions produced stronger effects than stimulus-agent instructions on implicit evaluations of the non-existing words. These findings support the idea that propositional processes play an important role in effects of approach-avoidance instructions on implicit evaluation and in implicit evaluation in general.

1. Introduction

As Zajonc (1980) argued in his seminal paper, people often evaluate stimuli in a spontaneous manner. Research has shown that such spontaneous or implicit evaluations are an important determinant of behavior (e.g., Greenwald, Poehlman, Uhlmann, & Banaji, 2009) and play a crucial role in a number of important psychological phenomena including psychopathology (Roefs et al., 2011), addiction (Wiers & Stacy, 2006), and social interaction (Fazio & Olson, 2003). Hence, understanding how implicit evaluations are acquired and activated is an important aim of psychological science. Cognitive theories of evaluation have traditionally assumed that implicit evaluations reflect the automatic activation of associations between representations in memory (for a review, see Hughes, Barnes-Holmes, & De Houwer, 2011). Because associations are assumed to form automatically when two events co-occur, much research on the acquisition and change of implicit evaluations has employed paradigms in which stimuli are repeatedly paired with valenced stimuli (EC: Hofmann, De Houwer, Perugini, Baeyens, & Crombez, 2010) or with valenced actions (approach-avoidance training: Kawakami, Phills, Steele, & Dovidio, 2007).

Recent studies, however, have established that changes in implicit stimulus evaluations can occur not only as the result of repeated pairings but also on the basis of mere instructions (De Houwer, 2006; Van Dessel, De Houwer, Gast, & Smith, 2015). For example, studies on the effects of approach-avoidance (AA) instructions have shown that participants who are instructed to approach certain stimuli and avoid other stimuli exhibit more positive implicit evaluations of to-be-approached stimuli than of to-be-avoided stimuli even if they never actually perform the AA actions. There is even evidence that these instruction-based effects on implicit evaluation can occur under certain conditions of automaticity. For instance, AA instructions influence implicit evaluations even when participants do not consider the acquired information a valid basis for their evaluation (as indicated by the fact that they do not incorporate this information in their explicit evaluation; Van Dessel, De Houwer, Gast, Smith, & De Schryver, 2016).

Effects of AA instructions on implicit evaluation pose a challenge to a particular type of associative models that assume that (a) implicit evaluations reflect the automatic activation of associations in memory and (b) these associations are formed as the result of a slow-learning process that capitalizes on repeated co-occurrences (Rydell & McConnell, 2006; Smith & DeCoster, 2000). Yet, instruction-based AA effects are consistent with propositional models, which assume that propositions, rather than associations, guide implicit evaluation (e.g., De Houwer, 2009, 2014; Mitchell, De Houwer, & Lovibond, 2009). When participants are instructed to approach or avoid a stimulus, they might generate propositions about

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these stimulus-action relations, and these propositions can influence their implicit evaluations of the stimuli (Van Dessel et al., 2016). For example, changes in implicit evaluations may occur as the result of AA instructions when participants infer that to-be-approached stimuli are more positive than to-be-avoided stimuli (e.g., because they know that people typically approach good things and avoid bad things) and the automatic retrieval of this propositional information influences implicit evaluation.

Importantly, a propositional model of implicit evaluation not only predicts that implicit evaluations can form as the result of a single instruction, but also that these effects should depend on the relational information embedded in these instructions (De Houwer, 2014). Propositions store information not only about the strength of the relationship between concepts but also about the nature of the relation (e.g., 'I approach Stimulus A'; see Shanks, 2007). If propositions mediate implicit evaluation, then changes in implicit evaluation (e.g., due to instructions) could depend on the relational meaning of the acquired information (stored as propositions). Hence, instructions that contain the same concepts (e.g., 'approach' and 'Stimulus A') might produce dissimilar effects on implicit evaluations if those concepts are related in a different manner.

We tested this prediction by giving participants instructions that differed not in the pairing of concepts (e.g., the stimulus and the AA action word), but in the agency relation specified in the instructions (i.e., who performs the AA action). Half of the participants received typical AA instructions which stated that *the participant* would perform a specific AA action in relation to a specific stimulus (i.e., move towards or away from a non-existing word). The other half of the participants received instructions which stated that *the stimulus* (i.e., the non-existing word) would perform the AA action in relation to the participant. We refer to the former instructions as 'self-agent instructions' and to the latter as 'stimulus-agent instructions'. Immediately following these instructions, participants' implicit evaluations of the two stimuli were registered with an Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998).[1] We examined whether the two types of instructions have a differential impact on implicit stimulus evaluations.

From the perspective of a propositional account, instruction effects on implicit evaluation should depend on the extent to which instructions allow for the acquisition of the propositional information that a specific stimulus is positive or negative. Participants may easily infer that the stimuli they approach are more positive than the stimuli they avoid because this is consistent with their previous learning history (i.e., most often, positive stimuli are approached and negative stimuli are avoided; see also Van Dessel et al., 2016). However, it is less certain that participants infer that an approaching stimulus is more positive than an avoiding stimulus because typically both pleasant and unpleasant stimuli can approach or avoid a person (see also Hsee, Tu, Lu, & Ruan, 2014). Hence, from the perspective of this propositional account, there are good reasons to predict that self-agent instructions should more strongly influence implicit evaluations than stimulus-agent instructions. As we will discuss in more detail later on, such a result would not only reveal an important moderator of AA instruction effects but would also have implications for theoretical accounts of those effects.

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[1] AA instruction effects have been observed on a number of implicit and explicit evaluation measures (see Van Dessel et al., 2015). The current study uses the IAT because this is currently the most widely used method to measure implicit evaluations. The IAT captures implicit evaluations in the sense that it registers evaluative responses under conditions that are typically associated with automatic processes (e.g., under time pressure, in the absence of evaluation goals, …: see De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009).

2. Method

2.1. Participants and design

A total of 1306 English-speaking volunteers participated online via the Project Implicit research website (https://implicit.harvard.edu). We stopped the data-collection when at least 1000 participants had completed all measures of the experiment to ensure that we would have sufficient statistical power to detect even small effects after data-exclusion (power > 0.80 to detect an effect size of $d = 0.20$). All data were collected in one shot without intermittent data analysis. Overall dropout rate was 29.5%. The dropout rates were comparable across the two conditions: 30.8% in the self-agent condition and 28.1% in the stimulus-agent condition, $\chi^2(1) = 1.20$, $p = 0.27$. Hence, there was no evidence for condition-dependent attrition.

In line with the standard treatment of Project Implicit data (e.g., Smith, De Houwer, & Nosek, 2013), data-exclusion involved removing participants who (a) did not fully complete all questions and tasks (190 participants; i.e., 14.6%), (b) had error rates above 30% when considering all IAT blocks or above 40% for any one of the critical IAT test blocks (31 participants; i.e., 2.4%), or (c) responded faster than 400 ms on > 10% of the IAT trials (29 participants; i.e., 2.2%). Analyses were performed on the data of 1056 participants (653 women, mean age = 33, SD = 14). Table 1 provides the number of included and excluded participants in each of the experimental conditions. The proportion of excluded participants did not differ significantly between conditions, $\chi^2(3) = 3.26$, $p = 0.35$. Note that including the data from all participants in the analyses did not result in any shift in significance for any of the reported effects. A full description of these results can be found at https://osf.io/d3tpj/. At this online repository we also provide a link to the online study as well as all data of the study and data analysis scripts.

2.2. Procedure

Upon being assigned to this study, participants were informed that they would participate in an experiment that would involve two meaningless words: UDIBNON and BAYRAM. Half of the participants then read the self-agent instructions:

> You will perform a task in which you will move towards BAYRAM and you will move away from UDIBNON. It is very important to remember which action belongs to which word. You will need this information to complete the task successfully. Later on we will explain to you exactly how you will be able to perform this task. For now, it is crucial that you remember that you will move towards BAYRAM and move away from UDIBNON. Before we present these words and start the task, you will complete a categorization task. This will last about 5 min. Make sure that during that task you do not forget the instructions of the next task. Please press 'Continue' when you have memorized the instructions and are ready to begin the categorization task.

The other half of the participants read the stimulus-agent instructions, which were identical with the exception of the two sentences that specified the agency relation. These sentences now indicated that participants would "*perform a task in which BAYRAM will move towards you and UDIBNON will move away from you*". Participants were prompted to remember this information with the following sentence: "*For now, it is crucial that you remember that BAYRAM will move towards you and UDIBNON will move away from you*". Note that the assignment of the words to the approach or avoidance action was counterbalanced across participants and across instruction conditions.

The reaction time task that followed was an IAT in which participants categorized attribute words as 'positive' or 'negative' and target words UDIBNON and BAYRAM as 'Udibnon' or 'Bayram'. To