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On the symbolic generalization of likes and dislikes☆

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ABSTRACT

Evaluative generalization refers to the fact that when evaluative responses towards a (focal) stimulus are established or changed, people change how they respond to non-focal stimuli as well. Whereas evaluative generalization between perceptually similar stimuli has been firmly established, the available evidence for symbolic evaluative generalization is less conclusive and limited to one possible type of relation (i.e., similarity). In this paper we offer a new set of procedures that can be used to systematically investigate symbolic evaluative generalization effects. We use these procedures to showcase how evaluative responses towards a focal stimulus can propagate to other stimuli when they are related on the basis of symbolic similarity, opposition, or comparison. These effects were evident when self-report, implicit, approach-avoidance, and behavioral choice measures were employed. Implications for theories of evaluative generalization are discussed and future directions outlined.

Evaluation is at the core of our psychological lives. It not only guides our judgments and decisions, but often dictates how we treat our friends and family, as well as other individuals and groups. Evaluations bias what we remember, influence the politicians we vote for, musicians we listen to, and products we consume. We therefore need to understand how, when, and why evaluations are established and what factors play a role in their change.

One such factor - the *generalization* of evaluations - may explain why evaluative learning can exert such a powerful and far-reaching influence on behavior. Evaluative generalization refers to the fact that once evaluative responses towards a focal stimulus are established or changed, people often emit similar responses to non-focal stimuli that are related to that focal object. Unlike (evaluative) conditioning effects (see Hofmann, De Houwer, Perugini, Baeyens, & Crombez, 2010), these changes in liking are not due to the mere spatio-temporal relation between focal and non-focal objects but rather to a different type of relationship. Most research on evaluative generalization can be divided into one of two categories: perceptual or symbolic.[1]

1. Evaluative generalization along perceptual dimensions

The generalization of evaluative responses is often based on the fact that focal and non-focal stimuli share *perceptual* properties with one another. This type of generalization plays a role in many social, cognitive, and clinical phenomena. Take the resemblance effect in social psychology: evaluations of strangers are often influenced by how much they physically resemble people we already know. Such generalizations tend to occur automatically without the perceiver's awareness or intent, increase in strength as the level of similarity between faces grows, and influence our judgments and decision making (see Gawronski & Quinn, 2013; Verosky & Todorov, 2010; Zebrowitz, White, & Wieneke, 2008).

Now consider the 'guilt-by-association' effect: evaluations of one individual can generalize to an entire group whenever they share physical properties such as age, ethnicity, or gender (Hütter, Kutzner, & Fiedler, 2014). The very same goes for novel consumer products: a mere physical similarity between a known (valenced) object and an unknown (neutral) object is often enough for valence to transfer from one to the other (e.g., Fazio, Eiser, & Shook, 2004). In clinical psychology, we

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[1] When we refer to a focal stimulus we are referring to a stimulus whose evaluative properties influence the evaluative properties of non-focal stimuli. In other words, the focal stimulus is the source of the change in valence and the non-focal stimuli are the target of the change in valence.

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have known since Watson and Rayner (1920) that conditioned fears towards an aversive stimulus (e.g., white rat) readily generalize to perceptually related (e.g., white and furry) stimuli. Recent work indicates that this is also true for anxiety and chronic pain (e.g., Lissek et al., 2014; Meulders & Vlaeyen, 2013).

2. Evaluative generalization along symbolic dimensions

Evaluative responses can also generalize when focal and non-focal stimuli are *symbolically* related. Relatively early on in their development, humans acquire the ability to generate, use, and respond to symbols in the world around them (Deacon, 1997). Whereas perceptual generalization effects are - by definition - heavily dependent on the degree of physical overlap between stimuli, generalizations based on symbolic relations are often free from any such constraints. These relations allow stimuli to be connected in a near infinite number of ways and for the psychological properties of one stimulus to influence how people behave towards others. For instance, imagine you are told that a brown sticky substance is poisonous and afterwards learn that this substance is similar to a green liquid, and that the liquid is similar to a white gas (Brown Solid-*Similar*-Green Liquid-*Similar*-White Gas). You may generalize what you have learned about the first stimulus (solid) to the last stimulus (gas), even though they share no physical properties.

Many phenomena in psychological science may qualify as symbolic evaluative generalization effects. Person perception is a prime example: personality traits that define one individual often influence stereotypes and evaluations of others even when those individuals share no physical similarity (e.g., Skowronski, Carlston, Mae, & Crawford, 1998). In marketing, prior evaluations of one consumer product (e.g., Sony television) frequently bias evaluations of other products that are released under the same brand name (e.g., Sony headphones) (i.e., the 'brand extension' effect; Ratliff, Swinkels, Klerx, & Nosek, 2012; Völckner & Sattler, 2006). This can occur despite the fact that the products are physically dissimilar and the individual has no prior experience with the novel items released under that brand name. Hence the symbolic relation between the stimuli (i.e., the fact that they are both 'Sony' products) may account for this finding.

The ability to symbolically relate stimuli drastically expands the remit of evaluative generalization and enables humans to transfer what they have learned about the evaluative properties of one stimulus to another even when they are physically unrelated. Unlike perceptual generalization effects (where physical overlap is crucial), symbolic relations can be established in many different ways.

3. A systematic investigation of symbolic evaluative generalization

Despite the importance of symbolic evaluative generalization, there has been little systematic research on this topic, both at the conceptual and empirical levels. At the conceptual level, we put forward the proposal that symbolic evaluative generalization has occurred if three conditions are met: (1) a change in liking took place, (2) that is an instance of generalization, and (3) that is due to a symbolic relation between stimuli. Hence, symbolic generalization excludes (1) changes in non-evaluative properties (e.g., arousal) or specific emotional responses (e.g., fear), (2) changes in liking that are instances of conditioning (i.e., due to a direct or indirect relation between the spatio-temporal properties of the focal and non-focal stimuli),[2] and (3) changes in liking that are due to perceptual relations between focal and non-focal stimuli.

Importantly, at the empirical level, virtually all studies on symbolic evaluative generalization fail to meet one or more of these criteria. For instance, some studies fail to control for perceptual overlap between stimuli (e.g., the focal [Reemo*lap*] and non-focal items [Bosaa*lap*] often share the same name-ending; Ranganath & Nosek, 2008). Others fail to exclude an impact of direct or indirect spatio-temporal relations (e.g., Ratliff et al., 2012) whereas still others focused on specific emotions rather than liking (e.g., Bennett, Meulders, Baeyens, & Vlaeyen, 2015). Past work has also tended to focus on a single type of symbolic relation (i.e., similarity). Generalization is usually based on the fact that one brand, individual, or group is *similar* to another. Yet stimuli can be related in many other (non-similarity based) ways which determine both the direction and magnitude of the generalization effect. Given the profound impact that relation type has on changes in liking for focal stimuli (e.g., Unkelbach & Fiedler, 2016; Zanon, De Houwer, Gast, & Smith, 2014), it is somewhat surprising to see that this factor has not yet been taken into account. In short, although symbolic evaluative generalization seems to play a role in many different phenomena, previous research on this topic is limited in several ways.

4. The current research

This lack of systematic research might (in part) be due to a lack of procedures to study this phenomenon, most prominently, procedures that control for the impact of perceptual relations and direct pairings. In this paper, we introduce a set of procedures that are designed to establish symbolic evaluative generalization. Our procedures not only allow one to minimize the impact of perceptual similarity and direct pairings but also provide a way of manipulating how stimuli are related. Using these procedures, we conducted a series of studies that together provide the first systematic investigation of symbolic evaluative generalization effects.

Across six experiments we examined the impact of symbolic similarity, opposition, and comparative relations on explicit and implicit evaluations. All studies followed the same basic format which we will briefly preview here. We first established two symbols as contextual cues meaning 'Same' and 'Opposite' (Experiments 1–4) or 'More than' and 'Less than' (Experiments 5–6). During a subsequent training phase, we presented these cues onscreen along with two other stimuli. By reinforcing the selection of a certain cue in the presence of specific stimuli we set out to achieve two outcomes: (a) establish a positive or negative valence for a focal stimulus and (b) relate this focal stimulus to other non-focal group members (Experiments 1–2), fictitious brand products (Experiment 3–4), or potential prizes (Experiment 5–6) (see Figs. 1 and 2). We then indexed evaluative responding using self-report, indirect (Implicit Association Task [IAT; Greenwald, McGhee, & Schwartz, 1998], Implicit Relational Assessment Procedure [IRAP; Barnes-Holmes, Barnes-Holmes, Stewart, & Boles, 2010], evaluative priming), approach-avoidance, and behavior choice tasks. Using a variety of indices allowed us to test the generality and robustness of our findings. Taken together, our studies provide new information on how the type of relationship between stimuli can moderate the direction and/or magnitude of generalization effects while controlling for perceptual overlap as well as direct or indirect pairings.

5. Experiments 1–4

Experiments 1–4 set out to model symbolic evaluative generalization in the context of social psychology (groups of novel stimuli

[2] Note that conditioning can be due to a direct or indirect relation between the spatio-temporal properties of stimuli. A direct spatio-temporal relation takes into account only the spatio-temporal properties of the two related stimuli whereas an indirect spatio-temporal relation also takes into account the spatio-temporal properties of other stimuli. For instance, stimuli that are repeatedly paired on a screen are directly related whereas stimuli that never co-occur but do co-occur with a common third stimulus are indirectly related in a spatio-temporal manner.