Lateral Attitude Change: Does Acceptance Versus Rejection of Focal Change Cause Generalization Versus Displacement?

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Abstract

The lateral attitude change (LAC) model distinguishes between *generalization effects*, where explicit and implicit attitude change toward a focal object generalize to similar, lateral objects, and *displacement effects*, where there is no explicit attitude change on the focal object, but only on lateral objects. To test the notion that conscious acceptance versus rejection of focal change distinguishes between the two patterns, female participants (N = 201) underwent positive versus negative evaluative conditioning (EC) of two focal objects and were then either not asked or asked to ignore the stimulus pairings they had seen in EC (rejection manipulation). Later, explicit and implicit attitudes toward the focal objects as well as toward several lateral objects were assessed via self-reports and an affect misattribution procedure, respectively. Unexpectedly, results showed that explicit focal attitudes were affected by EC independently of the rejection manipulation; also unexpectedly, EC effects on implicit focal attitudes depended on the rejection manipulation, with an EC effect evident only in the no-rejection conditions. Explicit lateral attitudes also were affected by EC independently of the rejection manipulation, whereas implicit lateral attitudes only showed a trend toward an EC effect. Thus, explicit generalization effects were observed, but no evidence for displacement effects was found. Furthermore, relative similarity of the lateral objects to the focal object did not moderate the strength of generalization effects. Conceptual and methodological implications for LAC are discussed.

Keywords: affect misattribution procedure, displacement, evaluative conditioning, explicit attitudes, generalization, implicit attitudes, lateral attitude change

Lateral Attitude Change: Does Acceptance Versus Rejection of Focal Change Cause Generalization Versus Displacement?

The term lateral attitude change (LAC) refers to effects of an attempt to change a person's evaluation of one attitude object (the focal object) on other, related attitude objects (the lateral objects). In a comprehensive model, Glaser et al. (2015) have described the associative and propositional processes (see Gawronski & Bodenhausen, 2006) involved in LAC. There are two types of LAC, called generalization and displacement. We speak of *generalization* when there is a pattern of explicit and implicit attitude change toward both focal and lateral objects; we speak of *displacement* when there is a pattern of explicit attitude change only toward the lateral objects, without any accompanying explicit change toward the focal object (as, e.g., in studies of indirect effects of persuasion: Steele & Ostrom, 1974; for further discussion, see Linne et al., in press).

In the current paper, we focus on one particular hypothesis derived from the LAC model. It states that conscious acceptance of implicit focal attitude change (the default) will lead to generalization, whereas conscious rejection of implicit focal attitude change will lead to displacement (Glaser et al., 2015; p. 266: Postulates 1-3). The experiment we are reporting was first conceived as part of a research proposal on LAC by Glaser and Bohner (2015, p. 10: Experiment 6). Our experimental paradigm consists of three steps: First, we attempt to change participants' attitudes toward a focal object X, then we either do or do not instruct participants to reject any change on X, and finally we assess both explicit and implicit attitudes toward X and several lateral objects Y varying in their similarity to X (Y1 = most similar, Y2 = moderately similar, Y3 = least similar). In the present study, we used evaluative conditioning (EC; see Hofmann et al., 2010; Walther & Langer, 2008) as the method for changing focal attitudes toward X (for similar designs using persuasion, see Linne et al., in press).

Our main predictions were the following:

Hypothesis 1a: Explicit focal attitudes toward X will be in line with EC valence in the no-rejection conditions, but not in the rejection conditions (i.e., there will be an interaction effect of EC and rejection manipulation on explicit focal attitudes).

Hypothesis 1b: Implicit focal attitudes toward X will be in line with EC valence independent of the rejection manipulation (i.e., there will be only a main effect of EC on implicit focal attitudes).

Furthermore, we predicted that, overall, lateral attitude change would be observed at explicit and implicit levels (see Glaser et al., 2015, p. 266: Postulates 1 and 2).

Hypothesis 2a: Explicit lateral attitudes toward Y1 to Y3 will be in line with EC valence (i.e., there will be only a main effect of EC on explicit lateral attitudes).

Hypothesis 2b: Implicit lateral attitudes toward Y1 to Y3 will be in line with EC valence (i.e., there will be only a main effect of EC on implicit lateral attitudes).

Finally, we also tested another prediction of the LAC model, which states that the strength of explicit lateral effects is moderated by the similarity of focal and lateral object. Under generalization conditions, lateral change is assumed to be a linear function of similarity between lateral and focal object, whereas under displacement conditions, it is assumed to be a quadratic function. Specifically, when generalization occurs, explicit lateral attitude change depends only on the spreading of activation from focal to lateral associative evaluations, which is strongest for similar lateral objects and weakest for dissimilar lateral objects. When displacement occurs, however, explicit lateral attitude change depends on both spreading of activation and the likelihood that conscious rejection of focal change will also be applied to lateral objects. The latter is most likely to happen for highly similar lateral objects where it cancels out the automatic effects of spreading activation. Hence, explicit lateral effects under displacement should be strongest for objects of medium similarity to the focal object, where conscious rejection is unlikely and spreading of activation is still strong (for further discussion, see Glaser et al., 2015, p. 269). Implicit lateral attitudes, however, should always display a linear generalization pattern.

Hypothesis 3a: In the no-rejection conditions, explicit lateral attitudes toward Y1 will be most affected by EC valence, explicit lateral attitudes toward Y3 will be least affected by EC valence, and explicit lateral attitudes toward Y2 will fall in between (i.e., there will be simple interaction effect of EC and the linear trend on similarity on explicit lateral attitudes).

Hypothesis 3b: In the rejection conditions, explicit lateral attitudes toward Y2 will be more

strongly affected by EC valence than explicit lateral attitudes toward both Y1 and Y3 (i.e., there will be a simple interaction effect of EC and the quadratic trend on similarity on explicit lateral attitudes).

Hypothesis 3c: Independent of rejection condition, implicit lateral attitudes toward Y1 will be most affected by EC valence, implicit lateral attitudes toward Y3 will be least affected by EC valence, and implicit lateral attitudes toward Y2 will fall in between (i.e., there will be an interaction effect of EC and the linear trend on similarity on implicit lateral attitudes).

In our experiment, we used novel and unfamiliar stimuli as attitude objects with the aim of generating new evaluations that are uncontaminated by pre-existing attitudes. Specifically, we used pictures of "space aliens", which also allowed us to freely manipulate features such as skin color, facial features, and shape of ears in order to establish graded levels of similarity between objects. Two focal objects (space aliens Xa and Xb) as well as six lateral objects (space aliens Ya1 to Ya3 and Yb1 to Yb3) were generated, pilot-tested, and used in the main experiment.

Method

Participants and Design

Female participants (N = 201) were recruited on the Bielefeld University campus (mean age = 23.47 years, SD = 4.50; age range: 17 to 50 years); most participants (n = 191) were students. Participants were randomly assigned to the conditions of a 2 (EC condition: Xa positive / Xb negative vs. Xa negative / Xb positive) x 2 (Rejection instruction: no vs. yes) design, which resulted in 49 to 51 cases per condition. In addition, the order in which explicit and implicit attitudes were assessed was counterbalanced. Participants received 3 Euros for their participation.

Procedure and Materials

Procedure and Rejection Manipulation

The experiment was conducted on desktop computers in a university lab, using Inquisit 5 for Windows (see http://www.millisecond.com). After providing informed consent, participants completed an evaluative conditioning (EC) task in which two focal objects, the pictures of space aliens Xa and Xb, were used as conditioned stimuli (CSs) that were paired with unconditioned stimuli (USs) of opposing valence (i.e., Xa with positive USs and Xb with negative USs, or vice versa).

Immediately after the EC task, participants in the rejection conditions were explicitly informed about the fact that there had been a consistent pairing of each of the two space alien pictures with other pictures of either positive or negative valence, and that it was known that this would affect people's evaluation of the objects. They were then instructed to resist any influence of the EC procedure by pretending that they had never seen the picture pairings (see Appendix for the exact wording of instructions). Participants in the no-rejection condition did not receive any explicit information on the pairing of pictures and were not instructed to resist any influence of EC. Later, all participants' explicit and implicit attitudes toward the two focal space aliens as well as toward six lateral space aliens were measured. Finally, participants completed items on contingency awareness; they also indicated their sex, age, student status, major, and semester. Then they were thanked and debriefed.

Attitude Objects

The stimuli used as attitude objects were pictures of eight space aliens, which we generated using SIMS 4 video game software (see https://www.ea.com/de-de/games/the-sims/the-sims-4). Two stimuli (Xa and Xb) served as focal attitude objects, and six stimuli served as lateral attitude objects. Three of the lateral objects (Ya1 to Ya3) were similar to Xa, and three (Yb1 to Yb3) were similar to Xb. Specifically, Xa and Ya1 to Ya3 had green skin, long chins, and round ears, whereas Xb and Yb1 to Yb3 had blue skin, short chins, and pointed ears. All pictures are included in supplementary materials that are available online on request. Pilot testing (N = 46) had indicated that the relative similarity of lateral to focal object, on a scale from 1 = *very dissimilar* to 9 = *very similar*, decreased from Ya1 to Ya3 (M = 6.72, 5.87, and 4.37) and from Yb1 to Yb3 (M = 7.41, 6.43, and 5.65). Furthermore, pilot data showed that the similarity of Xa and Xb with each other (M = 2.52) and with each lateral object from the opposite set (all M < 3.44) was low.

Evaluative Conditioning

CSs were the two space aliens that served as focal attitude objects (Xa and Xb). Depending on EC condition, either Xa was consistently paired with positive USs and Xb with negative USs, or Xa was consistently paired with negative USs and Xb with positive USs. The four positive USs were pictures of a lake, a tropical beach, a wintry landscape, and blossoms; the four negative USs were pictures of

a polluted beach, discarded scrap metal, a waste deposit, and a bird stuck in an oil spill. The US pictures were taken from the open affective standardized image set (OASIS) database (Kurdi et al., 2017) and from a previous pilot-test (Dojan, 2014); they are also included in the supplementary materials online. In each EC trial, a CS was displayed for 1500 ms, then followed a blank screen for 100 ms, which was followed by a US for 1500 ms. The inter-trial interval was 1500 ms. Each CS was paired twice which each of its associated USs, which resulted in 16 EC trials.

Assessment of Explicit Attitudes

To assess explicit attitudes, participants were shown all focal and lateral objects individually in a random order and asked to evaluate each stimulus on a horizontal slider scale; responses were coded from -100 = *negative* to +100 = *positive.*

Assessment of Implicit Attitudes

The affect misattribution procedure (AMP; Payne et al., 2005; Payne & Lundberg, 2014) was used to assess implicit attitudes. The space alien stimuli were used as primes, each being shown several times shortly before a Chinese ideograph that served as the target. Participants were instructed to ignore the pictures of space aliens and to focus on the Chinese symbols. Their task in each trial was to decide quickly whether the target appeared negative or positive to them by pressing the appropriate key ("E" for "negative" and "I" for "positive"). Each trial started with the display of a fixation cross in the middle of the screen for 250 ms, which was followed by the prime for 300 ms; then followed a blank screen for 125 ms, which was replaced by the target for 100 ms. The inter-trial interval was 250 ms.

First, there were ten practice trials using three other space aliens and a neutral grey rectangle as primes. Then followed the test sequence, which consisted of 24 filler trials, where neutral stimuli were used as primes, and 64 critical trials, where each of the focal and lateral attitude objects was presented eight times as a prime. The proportion of "positive" responses for each prime served as an index of implicit attitude toward that object.

Assessment of Contingency Awareness and AMP Check

To assess contingency awareness, each of the CSs (Xa and Xb) was shown and participants were asked to indicate whether the pictures that were displayed shortly after each CS were positive or negative (response options: *positive*, *negative*, *don't know*). To assess whether the Chinese symbols in the AMP were ambiguous as intended, participants were asked whether they knew the meaning of any of the symbols (response options: *none*, *a few*, *most*, *all*).

Results

AMP Check and Contingency Awareness

One participant reported to know most of the Chinese symbols used in the AMP; this case was excluded from analyses involving the AMP data. Almost all participants showed full contingency awareness (n = 170 or 85%), and this was independent of rejection condition (85% in the no-rejection condition, 84% in the rejection condition). We thus refrained from including contingency awareness as a factor in the analyses.

Focal Attitude Change

Prior to analyses, we recoded the attitude data in such a way that they reflected attitudes toward the positively conditioned space alien and toward the negatively conditioned space alien, respectively, collapsing across the specific stimuli Xa and Xb. Then we conducted mixed-model 2 x 2 ANOVAs with EC valence (positive vs. negative) as a within-subjects factor and rejection condition (no vs. yes) as a between-subjects factor, on explicit and implicit focal attitudes, respectively. For explicit focal attitudes, the ANOVA yielded a significant main effect of EC valence, $F(1, 199) = 7.68$, $p = .006$, $\eta^2 = .037$: Attitudes toward the positively conditioned focal object were more positive (M = +8.31, SD = 44.78) than attitudes toward the negatively conditioned focal object (M = -6.44, SD = 47.38). Other effects were not significant, all $F < 1$. Inconsistent with Hypothesis 1a, the predicted interaction of EC valence and rejection condition did *not* reach significance, although, descriptively, the size of the EC effect appeared to be smaller in the rejection condition (see Table 1 for condition means).

For implicit attitudes, the ANOVA yielded the predicted main effect of EC valence, $F(1, 198) = 6.79$, $p = .010$, $\eta^2 = .033$. Unexpectedly, this effect was qualified by an interaction of EC valence and rejection condition, $F(1, 198) = 8.95$, $p = .003$, $\eta^2 = .043$. In the no-rejection condition,

AMP scores toward the positively conditioned focal object (*M* = .638; *SD* = .252) were more positive than attitudes toward the negatively conditioned focal object (*M* = .517; *SD* = .282) *t*(100) = 12.30, *p* < .001, whereas in the rejection condition, AMP scores were unaffected by valence (*M* = .551; *SD* = .243 vs. *M* = .559; *SD* = .226), *t*(99) = -0.30, *p* = .77 (see Table 1). Thus, Hypothesis 1b also was not supported.

In sum, the data on focal attitude change were at variance with our hypotheses. Whereas the rejection manipulation did not significantly reduce the effect of the EC manipulation on explicit attitudes, it did completely suppress the effect of the EC manipulation on implicit attitudes. This means that the preconditions for testing LAC assumptions about generalization and displacement effects were not fully met. Nonetheless, we proceeded by analyzing the patterns of lateral attitudes.

Lateral Attitude Change

Attitudes toward lateral objects were recoded analogously, so that they reflected attitudes toward lateral objects related to the positively conditioned space alien and related to the negatively conditioned space alien, respectively. As an overall test of explicit lateral attitude change, averaged explicit ratings across the three lateral objects were subjected to a 2 x 2 mixed-model ANOVA with EC valence (positive vs. negative) as a within-subjects factor and rejection condition (no vs. yes) as a between-subjects factor. This yielded a main effect of EC valence, *F*(1, 199) = 14.09, *p* < .001, η^2 = .125; attitudes toward lateral objects were more positive in the positive EC conditions (*M* = +14.89, *SD* = 29.48) than in the negative EC conditions (*M* = +3.42, *SD* = 31.94). No further effects emerged, all p > .17 (see Table 2 for condition means). This pattern is in line with Hypothesis 2a.

For implicit lateral attitudes, the ANOVA yielded a trend toward a main effect of EC valence, *F*(1, 198) = 3.62, *p* = .059, η^2 = .018, all other *F* < 1. AMP scores toward lateral objects similar to the positively conditioned focal object tended to be more positive (*M* = .589; *SD* = .188) than AMP scores toward lateral objects similar to the negatively conditioned focal object (*M* = .562; *SD* = .203); see Table 2 for condition means. This pattern, though marginal, is in line with Hypothesis 2b.

To test Hypotheses 3a to 3c, we then conducted mixed-model ANOVAs that included attitudes toward each of the six lateral objects, with EC valence (positive vs. negative) and similarity to focal object (high, medium, low) as within-subjects factors and rejection condition (no vs. yes) as between-subjects factor. We included both linear and quadratic trend tests on the similarity factor and also ran simple effects test within each level of rejection condition where appropriate. Apart from confirming the main effects of EC valence reported above, these analyses yielded no further meaningful results. On explicit lateral attitudes, there was only a quadratic main effect of similarity, $F(1, 199) = 47.90$, $p < .001$, $\eta^2 = .33$, indicating that the lateral object of medium similarity was always evaluated most positively, but this was independent of EC valence and rejection condition, all $p > .27$. On implicit lateral attitudes, no further effects emerged, all $p > .22$. Hypotheses 3a to 3c thus received no support.

In sum, the analyses indicate that, overall, the EC procedure caused lateral attitude change at the explicit level. Interestingly, the EC effect on lateral explicit attitudes appeared to be much stronger ($\eta^2 = .125$) than the EC effect on focal explicit attitudes ($\eta^2 = .037$). The EC procedure also had a near-significant effect on implicit lateral attitudes. In line with Hypotheses 2a and 2b, neither of these effects was moderated by the rejection condition. Furthermore, none of the LAC hypotheses regarding patterns of generalization or displacement among the lateral objects (Hypotheses 3a to 3c) were supported.

Discussion

In the present experiment, an EC procedure was used to influence explicit and implicit attitudes toward novel objects. Participants saw pictures of two space aliens that were conditioned with opposite valences. Later, they explicitly evaluated these space aliens (the focal objects) as well as several similar space aliens (the lateral objects); also, their responses in an AMP using the space aliens as primes were used as indicators of implicit focal and lateral attitudes. In order to test hypotheses about generalization and displacement effects as predicted in the LAC model, half of the participants were informed about the stimulus pairings in the EC procedure and instructed to act as if they had not been exposed to the EC procedure; this was done to induce active rejection of focal

attitude change. The other half of participants received no such instruction, and we assumed that they would show the default pattern of accepting focal change.

When considering the no-rejection conditions first, we can conclude that the EC procedure was successful in inducing positive and negative focal attitudes at both the explicit and implicit level. Also, these attitudes generalized toward lateral objects, with a strong and significant effect at the explicit level, and a weaker, near-significant effect at the implicit level. We thus found evidence for generalization effects in those conditions where participants presumably had no reason to reject the focal influence of the EC procedure, as predicted by the LAC model (Glaser et al., 2015).

When considering the rejection conditions next, we must state an unexpected pattern. Surprisingly, there was evidence for rejection of a focal influence only at the level of implicit attitudes, as measured by the AMP, but not at the level of explicit attitudes. Thus, the preconditions for testing displacement effects were not met. To be sure, a mere failure of the rejection instruction to reduce the EC effect on explicit attitudes might be attributed to this particular manipulation being ineffective, especially as contingency awareness was high in all conditions, which may have helped bring about strong EC effects (Hofmann et al., 2010). However, the rejection instruction's apparent success in wiping out any EC effects on implicit attitudes contradicts such an explanation. Such a pattern is in contrast with the LAC model's basic assumption of evaluative associations spreading automatically to lateral objects (Glaser et al., 2015, p. 266), as long as we assume that the AMP reflects such automatic associations (for discussion, see Bar-Anan & Nosek, 2012; Payne & Lundberg, 2014).

Furthermore, though not significant, the descriptive patterns on both explicit focal attitudes and explicit lateral attitudes suggested a similar "dampening" effect of the rejection manipulation. This suggestive pattern looks as if a somewhat reduced focal effect in the rejection conditions may have been carried over to lateral attitude change. Clearer patterns of such reduced generalization instead of displacement were indeed found in our subsequent research (Linne et al., in press).

Turning to the hypotheses about similarity moderating generalization and displacement effects, we found no evidence for either linear or quadratic effects in line with EC valence on lateral

attitudes toward Y1 to Y3. The absence of any gradual change in the strength of EC effects as we go from highly similar to less similar lateral objects may be explained by the fact that participants always perceived two clearly contrasting categories of aliens – those of Type A (green, long chins, round ears) and those of Type B (blue, short chins, pointed ears). Any generalization from X to Y may thus be conceived as a generalization from exemplar to category, and within-category differences may have been overshadowed by the presence of clear-cut between-category differences. Such an accentuation of within-category similarity and between-category difference has been demonstrated for both non-social (Tajfel & Wilkes, 1963) and social objects (Haslam & Turner, 1992). In order to avoid this problem, future studies may rely on introducing just one category of stimuli that comprises one focal object and several related objects instead of juxtaposing two categories of stimuli with opposing valences.

Limitations and Outlook

Potential limitations relate to the type of attitude objects used in this study. The idea behind generating completely novel and fictitious stimuli was that such stimuli would not evoke any strong pre-existing evaluations; also, the similarity among objects could quite easily be manipulated by varying features such as color and facial features. Indeed, with the stimuli we used in this study we were able to generate more reliable EC effects on both focal and lateral attitudes than was the case in previous work (cf. Bohner et al., 2020). At the same time, however, the attitude objects used in this study were perhaps too novel or unusual, so that participants had little basis for estimating how the EC procedure may have influenced them, and thus could not effectively correct for such an influence. (Although, again, this would not explain the pattern of implicit focal attitudes.) In subsequent studies, we have therefore resorted to more common stimuli, such as consumer products, and have tried to provide more ecologically valid reasons for rejecting focal influence, such as information about consumer evaluations that have been faked – nonetheless, inducing reliable rejection of focal attitude change remained an elusive endeavor (see Linne et al., in press).

The current status of LAC theorizing and related evidence thus leaves us in search of more suitable operationalizations of rejection, in order to generate the preconditions for displacement

effects. In this regard, a striking feature of older studies on indirect persuasion that have shown patterns compatible with the LAC model's displacement effect (Alvaro & Crano, 1997; Steele & Ostrom, 1974) are scenarios where participants had a strong and socially mediated internal motivation to suppress an influence on their focal judgment. For example, in studies by Steele and Ostrom, participants were motivated to judge objectively without giving in to another person's blatantly extreme verdict. Similarly, in studies by Alvaro and Crano, students were unwilling to let themselves be influenced by a small minority's position on a socio-political issue. Nonetheless, in both studies, indirect effects of those rejected influence attempts did emerge on judgments about related topics (see also Geeraert, 2013, p. 1181). Additionally, in these studies participants were not actively instructed to suppress any focal influence but did so autonomously; also, the topics were involving and at least somewhat self-relevant. These considerations should be taken into account in the planning of future studies on LAC.

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Table 1

Means and Standard Deviations of Explicit and Implicit Attitudes Toward the Focal Objects as a Function of EC Valence and Rejection Condition

EC Valence[a]	Explicit Attitudes		Implicit Attitudes	
	No rejection	Rejection	No rejection	Rejection
Positive	+10.10 (47.28)	+6.51 (42.27)	.638 (.252)	.551 (.243)
Negative	-9.06 (48.62)	-3.80 (41.48)	.517 (.282)	.559 (.226)

Note. Explicit attitudes were assessed on a scale from -100 to +100; implicit attitude scores are proportions of positive AMP responses.

[a] Positive EC valence = averaged responses to the positively conditioned X; negative EC valence = averaged responses to the negatively conditioned X, collapsing across objects Xa and Xb.

Table 2

Means and Standard Deviations of Explicit and Implicit Attitudes Toward Three Lateral Objects Combined as a Function of EC Valence and Rejection Condition

EC Valence[a]	Explicit Attitudes		Implicit Attitudes	
	No rejection	Rejection	No rejection	Rejection
Positive	+18.02 (31.93)	+11.73 (26.56)	.595 (.196)	.583 (.180)
Negative	+2.45 (34.12)	+4.40 (29.72)	.556 (.214)	.568 (.191)

Note. Explicit attitudes were assessed on a scale from -100 to +100; implicit attitude scores are proportions of positive AMP responses.

[a] Positive EC valence = averaged responses to the three lateral objects similar to the positively conditioned X; negative EC valence = averaged responses to the three lateral objects similar to the negatively conditioned X, collapsing across objects Ya and Yb.

Appendix: Rejection Manipulation

Participants in the rejection conditions were shown the following text:

"The presentation of pictures is now completed. It is important for the remainder of the study that you read the following information carefully:

There are several studies showing that participants rate pictures more positively when these have been previously presented in combination with positive pictures and the other way around. In the sequence you have just seen as well, the space aliens depicted below were shown with either positive or negative pictures.

Now we are wondering, however, whether it is possible for participants to resist this common effect. Thus, when you are working on all the tasks that follow, we ask you to behave as if you had never seen these two space aliens in combination with the pictures before."