



When mere exposure leads to less liking: The incremental threat effect in intergroup contexts

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In two experiments we tested the hypothesis that repeated exposure to out-group-relevant attitude objects would lead to less liking following a threat to identity. In Experiment 1 exposure to abstract artwork ostensibly created by a member of an out-group university led to more liking under baseline conditions, but not following a manipulation of threat. In Experiment 2 we observed a negative relationship between exposure and liking following threat: liking reversed the typical mere exposure effect. Reported emotion mediated the interactive effect of threat and exposure on liking. These findings illustrate how social identity threat can be experienced incrementally as a function of exposure. We discuss the findings in the context of an integration of research on exposure, identity, attitudes, and contact.

Why do we like some things more than others – types of film (romance, action), types of music (jazz, classical, pop), different political ideologies (environmentalist, liberal), or groups of people (soap stars, tax inspectors)? There are a variety of objects, ideas, and people in our social worlds and our attitudes to each of them can range from highly positive to highly negative. One critical factor in developing positive or negative attitudes is exposure. This mere exposure effect (Zajonc, 1968) is very robust: the more we have experienced something, the more we like it (Bornstein, 1989). The effect has been observed across the range of attitude objects, from geometrical shapes, through to sounds, tastes, art, music, attitudes, and faces. But what happens when the attitude object is relevant for self-definition? Will there be the same effects of exposure to simple geometric shapes as for policies outlined by political parties which we do or do not support? We asked whether exposure effects would be observed when attitude objects are defined by *group membership*. One might reasonably suggest that no matter how many times our least preferred political party tells us their policies, we may well persist in our rejection of those ideas. In this article, we report our research into the conditions

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under which exposure will lead to more, or sometimes less, positive attitudes in intergroup contexts.

The mere exposure effect

In 1968 Zajonc reported a set of experiments in which the mere repeated exposure of 'Chinese-like' symbols was found to reliably predict their rated 'goodness of meaning'. Put simply, the more frequently particular symbols had been presented to participants, the more positive participants believed the symbols' meaning to be. This finding has been highly influential in the study of attitude formation and change. There have been over 200 investigations of this mere exposure effect, and meta-analytic evidence (Bornstein, 1989) suggests that it is a highly pervasive and robust phenomenon (Harrison, 1977; Stang & O'Connell, 1974). The effect is not limited to visual stimuli (as used in Zajonc's original demonstration), but has also been observed with auditory (Heingartner & Hall, 1974) and even gustatory stimuli (Crandall, 1970). Besides laboratory studies, the effect has been demonstrated in field settings (Moreland & Zajonc, 1976) and with respect to varied domains ranging from advertising (Sawyer, 1981) to food preference (Pilner, 1982).

Reversing the mere exposure effect

In his meta-analysis Bornstein (1989) outlined which sorts of stimuli and presentation styles produce the strongest exposure-liking responses. For example, the effect is stronger when people are unaware of the exposure frequency (Bornstein, Leone, & Galley, 1987; Kunst-Wilson & Zajonc, 1980), a heterogeneous presentation sequence tends to produce stronger exposure effects than homogeneous presentations (Matlin, 1974) and there appear weaker exposure effects with lengthening stimulus exposure (e.g. Harrison & Zajonc, 1970). The effect also appears to be greatest when a relatively small number of exposures are used (e.g. Stang & O'Connell, 1974). After 10–20 exposures the change in liking slows (Zajonc, Shaver, Tavriss, & Van Kreveld, 1972). Some researchers have then observed a *decrease* in liking as exposure increases beyond some boredom threshold, resulting in an inverted U-shaped curve (Kail & Freeman, 1973). Here then is a condition – prolonged exposure – under which the mere exposure effect does not only become weaker, but is actually *reversed* (see Bornstein, Kale, & Cornell, 1990; also Berlyne, 1970; Stang & O'Connell, 1974).

Brickman, Redfield, Harrison, and Crandall (1972) identified a second condition under which mere exposure can lead to less liking. In this study undergraduate students listen to a 90 second segments of five rock and roll songs from the B-sides of popular records from the 1960s. They listened to each song either 0, 1, 2, 5, or 10 times. Finally, participants listened to a 3–5 second segment from the chorus of each song and were asked to rate how much they liked the song. Brickman and colleagues expected to observe the mere exposure effect: a greater preference for the songs they had heard more frequently. However, what they actually found was a *decrease* in liking with increased exposure. This was particularly surprising given that prior to the study participants had reported that they liked rock and roll music. So why did increased exposure make attitudes less positive in this case? The researchers noticed after the experiment that many of the participants indicated that although they usually liked rock and roll music, they did not like the 'antiquated' style of music used in this experiment.

While the mere exposure effect robustly leads to more liking for stimuli that are novel and neutral in connotation, this research suggests that with initially *negative* attitudes repeated exposure may strengthen these negative affective reactions. To test this hypothesis, Brickman and colleagues conducted a further study in which participants were exposed to abstract paintings that they had previously rated very positively, very negatively, or neutrally. As expected, people with an initially neutral impression of the paintings liked them more with repeated exposure, as did people with an initially positive impression of the paintings. However, participants with an initially negative attitude liked the paintings less with repeated exposure. Brickman *et al.*'s (1972) findings suggest that characteristics of the stimulus that appear to imbue some *a priori* valence have an impact on the exposure effect. This empirical premise formed the basis for our integration of mere exposure and social identity processes.

Identity, threat, and exposure

Theoretically, the idea that social identities will have implications for exposure effects makes some sense. Social identity (Tajfel & Turner, 1979) and self-categorization (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) theories maintain that we are not simply passive members of social groups but that groups are an important source of self-definition and self-esteem (Hogg & Abrams, 1988; see also Ellemers, Spears, & Doosje, 2002). When group memberships are salient they have implications for how we interpret and react to information in our environment. In this case we propose that identities will have an impact on how we react to repeated exposure.

The research reviewed so far suggests that when attitude objects have some *a priori* or acquired negativity the effects of exposure may be attenuated or reversed. There is some evidence that such acquired positivity or negativity can originate in perceived social identities, and can have an impact on exposure effects. Perlman and Oskamp (1971) found that increased exposure to people who were defined as stereotypically positive (e.g. scientists or clergymen) or neutral (e.g. a nondescript man) increased liking, but that this was not observed for people perceived as initially *negative* (e.g. someone in a police line up). But we also know that stereotypes are not fixed, but fluid, flexible, and dynamic (McGarty, 2006; Smith, 2006), and that people dislike groups under certain socio-structural conditions. In particular, in intergroup contexts, acquired negativity can result from the experience of *threat* to social identity. Negative feedback from out-groups (criticism, insults, unfair treatment) can be threatening to in-groups and promote increased evaluative differentiation. For instance, Brown and Ross (1982) found that highly or moderately threatened participants displayed greater bias against the out-group compared to non-threatened participants. Breakwell (1978) demonstrated that threatening the identity of soccer fans led to greater in-group favouritism and Crisp, Heuston, Farr, and Turner (2007) have shown that soccer fans reactions to match loss can be negative emotions and avoidance of out-groups (for other examples of threat effects on out-group attitudes see Doosje, Ellemers, & Spears, 1995; Hodson, Dovidio, & Esses, 2003; Perreault & Bourhis, 1999).

It is therefore well established that threat - broadly defined - elicits negative reactions to out-groups. We extend this basic idea by further proposing that the *extent* to which out-groups will be negatively evaluated in such contexts will be *proportional* to exposure. The more exposure perceivers in such contexts will have to the source of the out-group threat, the less they will like them. To elaborate, social identity theory argues that negative reactions to out-groups following threat will vary depending upon

certain characteristics of the stimulus. In particular, threat will elicit more negative reactions as the relevance of a particular social comparison for self and identity becomes more apparent (Tajfel & Turner, 1979; Turner *et al.*, 1987; see also Brown & Abrams, 1986; Deschamps & Brown, 1983). For example, to a psychologist an insult about one's scholarship from a physicist at the same university is likely to elicit a stronger affective reaction than an insult from a physicist at a *different* university. The out-group threat may be identical in both cases but in the former it is more relevant (and likely to elicit a more negative reaction) than in the latter. Correspondingly, the closer the out-group is to the in-group in time and space, the more likely it is that in-group favouring reactions will be observed (Jetten, Spears, & Manstead, 1998).

Here we hypothesized that repeated exposure will serve to make any threatening comparison more salient and meaningful to perceivers. Our thesis is that when you have experienced threat from the out-group then further exposure to that out-group will serve to heighten the negative impact of that threat: *an incremental threat effect*. To return to the above example, we may be able to shrug off the insult from that physicist if they make only infrequent appearances around campus, but if we see them repeatedly then the insult might foster a growing dislike.¹ There is no research in the social identity literature that tests this incremental threat hypothesis, yet it can be derived from an integration of what we know about the theoretical mechanics of identity maintenance and mere exposure effects. We tested this novel hypothesis in Experiment 1.

EXPERIMENT 1

Method

We used a pilot study to select the stimulus objects for Experiment 1. During this pilot the 20 participants were required to rate a selection of abstract pictures for liking. There were 12 pictures. Participants pressed the space bar and the first picture appeared on a computer screen.

They then rated how much they liked the picture on a scale from 0, not at all liked, to 10, liked very much. Participants then pressed the space bar to move on to the next picture until all 12 pictures were rated. The picture ratings were analysed and three pictures that did not significantly differ for liking were selected for use in the main experiment as target stimuli ($F(2, 38) = 0.039$, $p = .962$, $M_s = 5.45, 5.35, 5.55$). We were thus able to use stimuli that were, at baseline, equal in terms of likeability to examine the independent effects of exposure.

Participants and design

Sixty four undergraduate students (mean age 23; 46 females, 18 males) were allocated to a 2 (threat: no threat vs. threat) \times 3 (exposure frequency: low vs. moderate vs. high) mixed design with repeated measures on the last factor. The participant in-group were University of Birmingham students and the target out-group were University of Aston

¹ We are talking here about repeated neutral exposure. Further exposure in positive contexts (perhaps they apologise) or negative contexts (perhaps they repeat the insult) would be expected to exert their own more obvious effect on attitudes. Here we are interested in the effects of exposure independent from any qualifying valance associated with that exposure.

students (a local rival university who were a relevant and obvious intergroup comparison for our participants). Participants received either course credits or a small monetary payment for their assistance.

Procedure

The exposure phase of the experiment was carried out on computer. Participants first read on the screen the cover story. In the no threat condition, the following text was presented:

We would like you to study some abstract art on the computer in front of you. This abstract art was created either by students at the Universities of Birmingham or Aston University. The artistic efforts will be compared by representatives from a consortia of local businesses. These representatives are interested in assessing basic skills and creativity of students at different Midlands-based universities (this being but one of a battery of basic indices of creativity). We are interested in the ratings you provide as an internal check on quality. We have collated feedback from both Birmingham and Aston students. So far in testing Birmingham and Aston students have both been fair and accurate in their ratings.

In the threat condition, this text was identical with the exception of the final section that read:

We have collated feedback from both Birmingham and Aston students. So far in testing Aston students have been giving low ratings for art created by University of Birmingham students.

The feedback that the out-group students who were ostensibly taking part in the same experiment had either been fair or critical in their assessment of the in-group pictures therefore constituted the manipulation of threat. We wanted to establish a clear link between our study and existing research on identity threat, given the potential implications for conceptualizations of the threat experience. Receiving apparent negative feedback (e.g. insults, criticism, or low performance estimates) is an established means of manipulating threat in the social identity literature (for a review see Branscombe, Ellemers, Spears, & Doosje, 1999). We therefore adopted this approach.

Following the manipulation of threat participants viewed a series of pictures ostensibly created by the out-group (Aston University) students. To avoid suspicion participants were told that because this was a pilot experiment there were a few 'glitches' with the programme, which meant that they may see some pictures more than once. Participants were exposed to 21 different pictures. Eighteen of these were fillers and presented only once. The remaining three were experimental pictures, derived from the pilot experiment described above, and presented 3, 6, or 9 times (which we classified as low, moderate, and high exposure frequencies). Participants were therefore exposed to a total of 36 slides (18 fillers and 3 experimental pictures presented a total of $3 + 6 + 9 = 18$ times). The specific pictures that were presented at low, moderate, and high rates were counterbalanced across the sample using a Latin-squares design. For example, for participant one experimental slide 1 was presented three times, experimental slide 2 six times, experimental slide 3 nine times. For participants two experimental slide 1 was presented nine times, experimental slide 2 three times, experimental slide 3 six times. For participant three experimental slide 1 was presented six times, experimental slide 2 nine times, experimental slide 3 three times, and so on. In addition, the order of presentation of the whole set of experimental and filler slides was randomized for each participant. Post-experimental de-briefing confirmed

that these measures taken to avoid suspicion were effective. All of the stimuli were presented in the middle of the computer screen for 2,000 milliseconds with an inter-stimulus interval of 2,000 milliseconds.

Dependent measures

Following the exposure phase, participants received a response sheet and were required to rate the three experimental picture slides for familiarity. Each picture slide appeared on screen once until the space bar was pressed to move on to the next picture. Participants were asked how familiar they were with the picture and then how much they liked the picture. Both familiarity and liking were rated on a scale between 1, *not at all familiar/liked* to 7, *very familiar/liked very much*. Finally, participants were thanked for their assistance and debriefed.

Results and discussion

Familiarity

The 2 (threat: no threat vs. threat) \times 3 (exposure: low vs. moderate vs. high) mixed ANOVA with repeated measures on the last factor revealed only one effect, the predicted main effect of exposure, $F(2, 124) = 19.38, p < .0005$. Overall, participants reported greater familiarity with the high exposure pictures ($M = 6.22$) than the moderate ($M = 5.73$), or low exposure pictures ($M = 4.95$). The high exposure picture was perceived as more familiar than both the moderate, $t(63) = -3.28, p = .002$ and low, $t(63) = -5.44, p < .0005$ exposure pictures, and the moderate exposure picture was perceived as more familiar than the low exposure picture, $t(63) = -3.77, p < .0005$. This confirmed the effectiveness of our exposure manipulation.

Liking

The 2 (threat: no threat vs. threat) \times 3 (exposure: low vs. moderate vs. high) mixed ANOVA with repeated measures on the last factor revealed the predicted two-way interaction, $F(2, 124) = 5.27, p = .006$. Further analysis revealed that in the control condition higher exposure led to greater liking (low exposure $M = 3.21$, moderate exposure $M = 3.96$, and high exposure $M = 4.54, F(2, 54) = 6.30, p = .003$). The high exposure picture was liked more than the low exposure picture, $t(27) = -3.46, p = .002$, and the moderate exposure picture was liked more than the low exposure picture, $t(27) = -2.35, p = .027$. The high exposure picture was also liked more than the moderate exposure picture, although this difference was not significant, $t(27) = -1.38, p = .178$.² This positive relationship between exposure and liking was not apparent in the threat condition, $F(2, 70) = 0.928, p = .400$ (low exposure $M = 4.42$, moderate exposure $M = 4.25$, and high exposure $M = 3.86$), see Figure 1.

To summarize, in Experiment 1 we observed a significant interaction between threat and exposure with respect to liking of out-group-related stimuli. In the no threat condition participants liked the high exposure (high familiarity) out-group drawings more than the low exposure (low familiarity) drawings - the typical mere exposure effect. However, this relationship was not observed in the threat condition.

² Arguably we could make a directional prediction here, and a one-tailed *t* test reveals a difference approaching significance that is consistent with our predictions, $p < .09$.

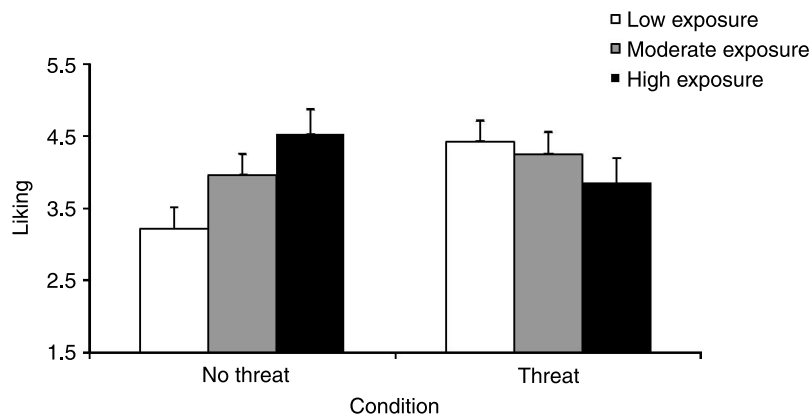


Figure 1. Liking for out-group artwork as a function of exposure following no threat or a threat to in-group identity, Experiment 1.

One obvious question here is why should threat have eliminated the positive exposure–liking relationship, but not, as we predicted, reversed it? We have argued that following threat one of the reasons why exposure serves to heighten negative reactions to out-groups is because it makes the threat more salient, meaningful, and relevant. A possibility for the lack of reversal in Experiment 1 was that the context was simply not relevant enough to provoke this reaction. Participants did not rate out-group members, they rated abstract drawings ostensibly *created by* out-group members. Arguably, for threat to instigate a desire for out-group rejection, the stimuli concerned should be more directly associated with the out-group. This explanation is consistent with the general model we propose: that repeated exposure makes a threatening out-group more salient, meaningful, and relevant for social comparison. It would make sense that the stimuli themselves should be directly identity-relevant by being explicitly associated with, or representative of, the out-group. In addition, while the university out-group in Experiment 1 was a clear basis for social comparison; one can imagine more familiar and pervasive dimensions (such as, e.g. nationality or ethnicity). It is on such dimensions that we would expect threat and then repeated exposure to lead to less liking.

In Experiment 2 we therefore used actual group stimuli and a more pervasive basis for intergroup comparison to see whether a reversal of the positive exposure–liking relationship would be observed. In addition we included a scale measuring positive and negative affect. Recent research on intergroup emotions theory has outlined a central role of experienced emotion in defining and determining reactions to out-groups and out-group behaviour (Mackie, Devos, & Smith, 2000; Mackie, Silver, & Smith, 2004; Smith, 1993). With respect to the sort of intergroup context we focus on here, Ensari and Miller (1998) found that insults from a particular out-group member led to the experience of negative affect and subsequently lowered evaluations, suggesting that threat effects on out-group evaluation are driven by negative emotions. We argue that the reason why continued exposure to a threat-inducing stimulus will lead to less liking is because the incremental exposure to the source of the threat will serve to make this threat more salient. In other words, we should experience incrementally more negative emotion. We therefore explored this possibility in Experiment 2.

Finally, we included a measure of in-group identification. In-group identification is a measure of the extent to which participants currently define themselves in terms of a relevant group membership. Our hypothesis is that a proportional dislike of out-groups with repeated exposure is functionally related to members' desire to possess a positive social identity (i.e. serves to protect the positive status of the in-group, and, by reflection, the positive view of the self). If this is the case then proportional identification with in-groups should follow exposure and threat as a form of identity re-affirmation. We know that heightened identification with in-groups follows identity threat (Spears, Doosje, & Ellemers, 1997); we argue that this level of identification will be proportional to exposure. In other words, if exposure to out-groups following threat leads to less liking because it is linked to group members' desire to maintain a positive social identity through social comparison, then we might expect to observe higher levels of in-group identification at higher levels of exposure.

EXPERIMENT 2

Method

Participants and design

Sixty one female undergraduates at the University of Birmingham (mean age 20) were randomly allocated to a 2 (threat: no threat vs. threat) × 2 (exposure: low vs. high) mixed design with repeated measures on the second factor. All participants were British and the target out-group stimuli were French names.³ We used names because they are stimuli that clearly indicate group membership in this context. Participants received course credit for their assistance.

Procedure

The procedure was very similar to that used in Experiment 1. Participants were tested individually by computer and read on-screen instructions. In the no threat condition participants were told that the experimenters were currently investigating people's liking for particular names. They read on the computer screen the following text:

We've been looking at how much British people like French names, and vice versa, how much French people like British names. We would like you to study some French names that will appear on the computer in front of you. Ratings of names are being used to establish an international database on name likeability, which will be used in further studies in language and onomastics (the study of names). So far in testing, French and English participants have given equal ratings for likeability of names.

Half of the participants read this paragraph, the other half were allocated to the threat condition and read exactly the same paragraph but we changed the final sentence to read: 'So far in testing, French participants have been giving substantially lower ratings for English names than vice versa'. This therefore constituted the threat manipulation.

³ The intergroup comparison we chose was British versus French, a relationship that has a history of both political and economic conflict and co-operation. Examples include De Gaulle's veto blocking Britain's application to join the European Community in 1963, France's ban on British beef in 1999, while at the same time both nations are members of the European Union and have established links in terms of politics, trade, and tourism. These characteristics combine to make this a clear and recognizable basis for intergroup comparison for our participants.

Following this was the exposure phase. To reduce the chances of suspicion participants were told: 'We will now present you with some female French names in a random order. In order to carry out our validity analysis, some names will appear more than others'. Twenty-one female French names were used as target stimuli. Nineteen of the names were fillers and presented only once to each participant. The two target names (Chantal and Josephine) were presented either three or nine times to each participant, respectively. These two names were rated as equally familiar and likable in a pilot study with 32 undergraduate participants, $t(30) = 0.408$, $p = .686$ and $t(30) = 1.12$, $p = .272$, respectively. There were therefore no pre-existing differences in terms of familiarity and likeability. The two target names used were counterbalanced so that both appeared an equal number of times in low and high exposure positions across participants and threat conditions. There were therefore four combinations of threat and counterbalancing of name exposure: (1) No-threat, Chantal as low exposure, Josephine as high exposure; (2) No-threat, Chantal as high exposure, Josephine as low exposure; (3) Threat, Chantal as low exposure, Josephine as high exposure; and (4) Threat, Chantal as high exposure, Josephine as low exposure. All of the stimuli were presented in the middle of the computer screen for 2,000 milliseconds with an inter-stimulus interval of 2,000 milliseconds. Following this, participants completed the dependent measures, were thanked and debriefed.

Dependent measures

Following the exposure phase participants were presented with two response sheets (one for each name) each with three sections. The first section asked participants how many times they had seen the target (Chantal and Josephine respectively) during the experiment on a scale ranging from 1 to 10 times. The second part included six affect items and asked participants to rate how the name made them feel on a scale of 1, *not at all* to 7, *very much so*. Three of the affect items were positive: 'calm'; 'happy'; and 'relaxed', and three were negative: 'tense'; 'annoyed'; and 'irritated' (the items were adapted from Mackie *et al.*, 2000). The emotions formed reliable indices for both high exposure name positive emotions ($\alpha = .87$), high exposure name negative emotions ($\alpha = .91$), low exposure name positive emotions ($\alpha = .77$), and low exposure name negative emotions ($\alpha = .93$) and so the mean was computed for each and the appropriate index formed. The third part asked participants to rate their liking of the name on a scale of 1, *not at all* to 7, *very much so*. Finally, on a separate page participants completed measures of in-group identification: 'I identify strongly with other British people'; 'Being British is an important part of who I am'; 'I feel strong ties with other British people'; and finally 'I feel a strong sense of solidarity with other British people' all anchored 1, *not at all* to 9, *very much so*. The items were adapted from Luhtanen and Crocker (1992) and had good internal reliability, ($\alpha = .94$), so a mean index of identification was calculated accordingly.

Results and discussion

Familiarity

The 2 (threat: no threat vs. threat) \times 2 (exposure: low vs. high) mixed ANOVA with repeated measures on the last factor revealed only one effect, the predicted main effect of exposure. Overall, participants reported greater familiarity with the high exposure

names ($M = 7.61$) than the low exposure names ($M = 2.89$), $F(1, 59) = 1174.38$, $p < .0005$. This confirmed the effectiveness of our exposure manipulation.

Liking

The 2 (threat: no threat vs. threat) \times 2 (exposure: low vs. high) mixed ANOVA with repeated measures on the last factor revealed the predicted two-way interaction, $F(1, 59) = 51.90$, $p < .0005$. Decomposition of this interaction revealed that while in the no threat condition higher exposure led to greater liking (low exposure $M = 3.03$, high exposure $M = 5.26$, $t(30) = 6.68$, $p < .0005$), this was not the case in the threat condition. In fact following a threat to the in-group higher exposure led to significantly less liking ($M = 2.87$) than low exposure ($M = 4.70$), $t(29) = -4.01$, $p < .0005$. The positive relationship between exposure and liking observed in the no threat condition was reversed following threat, see Figure 2.

Emotion

The 2 (threat: no threat vs. threat) \times 2 (exposure: low vs. high) \times 2 (emotions: positive vs. negative) mixed design ANOVA with repeated measures on the last two factors revealed a significant three-way interaction, $F(1, 59) = 4.23$, $p = .044$, see Table 1. We decomposed this interaction by analysing positive and negative emotions separately. For negative emotions the threat \times exposure ANOVA yielded no significant effects. For positive emotions there was a main effect of threat, $F(1, 59) = 4.47$, $p = .039$. Positive emotions were overall lower in the threat condition ($M = 3.97$) compared to the no threat condition ($M = 4.35$). This was qualified, however, by a threat \times exposure interaction, $F(1, 59) = 10.37$, $p = .002$. In the no threat condition higher exposure led to more positive emotions relating to the stimuli ($M = 4.60$) than for lower exposure ($M = 4.10$), $t(30) = 2.34$, $p = .026$. In contrast, in the threat condition higher exposure led to less positive emotions relating to the stimuli ($M = 3.70$) than for lower exposure ($M = 4.24$), $t(29) = -2.22$, $p = .034$. The positive relationship between exposure and positive emotions observed in the no threat condition was thus reversed following threat.

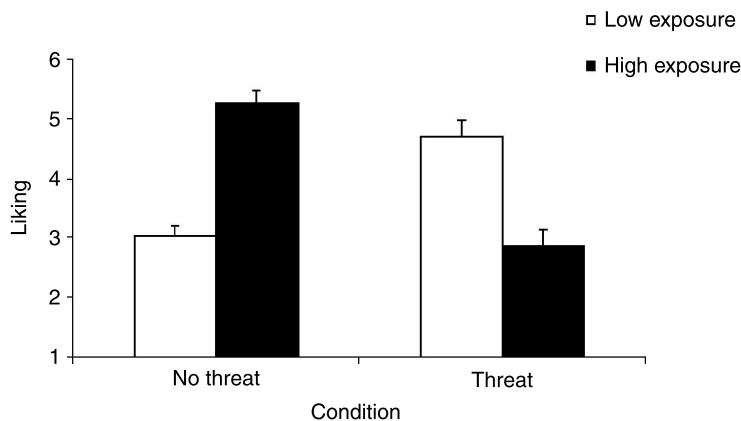


Figure 2. Liking for out-group names as a function of exposure following no threat or a threat to in-group identity, Experiment 2.

Table 1. Emotion as a function of exposure and threat, Experiment 2

	Threat			
	No threat		Threat	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Positive emotions				
Low exposure	4.10	0.817	4.24	0.825
High exposure	4.60	0.983	3.70	1.12
Negative emotions				
Low exposure	1.86	1.19	1.96	0.974
High exposure	1.66	0.863	1.80	1.14

Mediational analysis

To test whether reported emotions explained the tendency to like out-group names depending upon exposure as a function of threat we computed a mediational analysis. We first computed indices reflecting the difference in liking and emotion between high and low exposures. We subtracted mean liking for low exposure names from mean liking for high exposure names, creating an liking index where positive values indicated a positive relationship between exposure and liking (more exposure = more liking). We did the same for positive emotions, creating an index where positive values indicated a positive relationship between exposure and positive emotions (more exposure = more positive emotions). Threat (no threat vs. threat) was the predictor, the positive emotion differential index was the mediator, and the liking differential index was the outcome variable. In the first step, threat predicted liking differential, $\beta = -0.68, p < .0005$. In the next step, threat predicted positive emotion differential, $\beta = -0.39, p = .002$. In the final step, positive emotion differential predicted liking differential while controlling for threat, $\beta = 0.58, p < .0005$. In this equation, the threat-liking differential relationship remained significant, $\beta = -0.46, p < .0005$, but a Sobel test was significant, $Z = 3.00, p = .003$, see Figure 3.

This analysis supported the hypothesis that the reason why the positive relationship between exposure and liking was reversed in the threat condition was because high

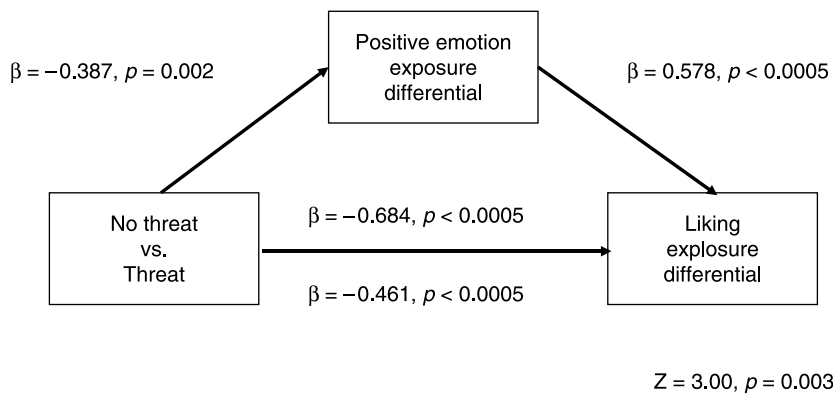


Figure 3. Mediational model of the role of positive emotions in explaining the effects of threat on liking of high versus low exposure names, Experiment 2.

exposure led to less positive emotions being felt towards the stimuli (i.e. increasing perceived threat reflected in decreasing positive emotion with higher exposure).

Identification

Identification was measured post-manipulation and exposure was a within-subjects variable. We therefore computed within threat condition correlations between identification and the three indices used in the mediational analysis: liking differential (high minus low exposure), positive emotion and negative emotion differentials. Higher values in these indices indicated the extent to which higher exposure led to more liking, more positive emotions or more negative emotions. In the no threat condition identification was not related to any of these indices (for all three, $p > .22$). This confirmed our expectations: we expected no reactive increase in identification proportional to exposure and liking to be observed in the absence of threat. However, in the threat condition, higher identification was associated with less liking for high versus low exposure names, $r(30) = -.63$, $p < .01$, and less positive emotions felt towards high versus low exposure names, $r(30) = -.44$, $p = .015$. There was no relationship between identification and the negative emotion exposure index, $p > .68$. These findings indicate that after threat more exposure led not only to less positive feelings towards, and liking of, the out-group stimuli, but also higher in-group identification, consistent with the idea that the negative reaction to exposure after threat is linked to the drive to maintain a positive social identity.

GENERAL DISCUSSION

In this research we integrated literatures on mere exposure, social identity, threat, and intergroup attitudes. In two experiments we observed a moderating effect of identity threat on the relationship between exposure and liking for out-groups. Our findings illustrate an *incremental threat effect* whereby negative out-group evaluation following out-group threat is proportional to out-group exposure. We discuss the implications of these findings below.

Theoretical implications

As well as identifying an important moderator of mere exposure effects, these findings have significant implications for social identity theory. Our findings extend social identity theorizing by, for the first time, demonstrating that reactions to identity threat can be experienced *incrementally*. Following threat more exposure led to less positive affect and less liking of out-group-related material. Notably we also found that under threat the extent to which participants preferred high versus low exposure names was negatively correlated with identification. That is, the more participants were exposed to out-group names, the less they liked them, and the higher they identified with their in-group. This is consistent with the idea that exposure after threat makes the threat more salient and meaningful for social comparison. A threat to identity invokes affirmation as an in-group member (identification) in proportion to the salience of (exposure to) threatening out-groups and participants' emotional reaction to this. We believe that this incremental threat effect is indicative of a potentially important route for future research seeking to understand the implications of exposure for social identity and intergroup attitudes.

Broadly speaking this research suggests quite specific conditions under which exposure-based strategies of attitude change might be most effective. For instance, if the identity portrayed by the source emphasizes (potentially identity threatening) dissimilarities between the perceiver and message source, it is likely to fall on deaf ears, irrespective of how often it is repeated. There is also one specific area where we believe our findings have significant import. Work on intergroup contact theory (Allport, 1954; Brown & Hewstone, 2005; Pettigrew, 1998) has shown that contact - exposure - between different social groups can be of considerable benefit to intergroup relations. A recent meta-analysis of over 500 studies has confirmed a robust, highly significant, negative relationship between contact and prejudice (Pettigrew & Tropp, 2006). It is therefore well established that even mere contact can have a positive impact on liking of out-group members. While it is important to acknowledge that participants in our experiments reported liking for out-group-related attitude objects (not out-groupers themselves), our findings suggest that exposure under *threatening* conditions may be less than optimal, and may foster the kind of enhanced disliking observed here. Consistent with this idea Tropp and Pettigrew (2005) observed that the inverse relationship between contact and prejudice was weaker among minority groups, who are likely to experience more identity threat relative to majority groups. We argue that just as it is important to be aware of conditions that *facilitate* the positive impact of contact, such as co-operative interaction, sustained close contact, etc., it is also important identify conditions that might eliminate or even reverse these positive effects. Identity threat might therefore be an important aspect of intergroup contexts to avoid prior to the application of any contact-based intervention.

We should also here consider whether an evaluative conditioning (EC) account could provide a competing explanation for our findings. EC involves a conditioning stimulus (CS) acquiring positive or negative valence via pairing with an unconditioned stimulus (US) (see De Houwer, Thomas, & Baeyens, 2001). Perhaps identity threat could serve as the US which is paired with the out-group name (the CS) and that the inverse correlation between exposure and evaluation can be explained by a simple EC effect? There is, however, a critical procedural distinction between our paradigm and EC paradigms that means that our effect cannot be explained by EC. We did not successively pair the US (threat) with the CS (name) - this pairing only occurred once. What is repeated subsequently is only the CS (in our experiment, the name) - not the threat. Variable exposure to the CS following a single pairing could therefore not explain increased or decreased liking. In fact, following repeated exposure of just the CS following an initial pairing of the CS and US once we would expect *extinction* of the learned association, which is the opposite of what we observed. In contrast, our motivational account can explain not only why we observed the reversal of the mere exposure effect under threat, but also why strengthening the identity-relevance of the target stimuli following Experiment 1 led to the incremental threat effect in Experiment 2.

Finally, it is interesting that the impact of threat on liking was mediated by reported positive but not reported negative affect. There has been considerable debate as to the independence of positive and negative affect (Diener & Emmons, 1984; Watson, Clark, & Tellegen, 1988), so it might seem at first glance strange that we observed decreasing positive affect with exposure following threat (rather than increasing negative affect). We believe, however, that this finding is consistent with the intergroup nature of the effects we observed. It is well established that out-group dislike tends to be manifest on positive dimensions, but not negative dimensions (especially when both are available) - the so-called 'positive-negative asymmetry effect' (Wenzel & Mummendey, 1996).

We have argued that the incremental threat effect is a consequence of social comparison mechanisms associated with social identity maintenance. These mechanisms are party to this positive-negative asymmetry. As such we would indeed expect to observe dislike for out-group stimuli in the form of less positive feelings, rather than more negative feelings. Confirming the involvement of this and other intergroup phenomenon as related to the incremental threat effect will be an important issue for future research, a topic to which we now turn.

Future research

This is, to our knowledge, the first demonstration that social identity threat can lead to negative reactions to threatening out-groups in proportion to the degree of exposure to those out-groups. We have argued that negative emotion underlies this effect and findings from Experiment 2 support this proposed mechanism. However, we also appreciate that as the first demonstration of this effect there are other candidate processes that may be involved. For instance, one possibility is that both automatic and controlled processes are at work, with identity motivations representing a conscious correction process over the top of any initially positive exposure reaction (e.g. Lee, 2001).

We also note that our findings converge with others' providing intriguing links between exposure, contact and attitudes in intergroup contexts. Smith, Dijksterhuis, and Chaiken (2008) repeatedly exposed white participants to white faces and found subsequent increased prejudiced against black targets, particularly when participants had a strong pre-manipulation attitude towards their in-group. The items used to measure attitude strength included reference to the extent that the in-group was important to their self-concept, that is, in-group identification. Although our focus was on exposure to out-group (not in-group) relevant stimuli these findings add support to the idea that group membership plays a moderating role in exposure effects. More specifically, we argue here that a proportional dislike of out-groups with repeated exposure is functionally related to members' desire to possess a positive social identity (i.e. it serves to protect the positive status of the in-group, and, by reflection, the positive view of the self). As noted above, we know that heightened identification with in-groups is related to identity threat (Spears *et al.*, 1997). If this is the case then just as exposure to out-groups following threat leads to less liking because it helps maintain a positive social identity, then exposure to in-groups might lead to less out-group liking via the same social comparison mechanism. This will be an interesting issue for future research.

Future research should also explore the impact of using different manipulations of identity threat. Although we used a well-established manipulation, negative out-group feedback, it is possible that other motivations are operative in this context (procedural fairness, competitiveness). We would argue that these additional motivations are not mutually exclusive with the identity threat process that we have postulated. For instance, a recent programme of research on identity threat has identified several component reactions to criticism, such as defensiveness, perceived constructiveness, and legitimacy, all of which contribute to an increase in negative out-group attitudes (Hornsey, Oppes, & Svensson, 2002). Thus, while it is possible that our manipulation may trigger additional motivations we would not expect these to discount the identity threat processes we have proposed. Nevertheless, in future research it would be valuable to explore these different motivations and whether they lead to variations in the threat-exposure effects we have demonstrated.

Conclusions

In this article we investigated whether threat moderates the exposure-liking relationship in intergroup contexts. In two experiments we supported the hypothesis that under baseline conditions exposure to out-groups will lead to greater liking, but that following threat this relationship can be attenuated or reversed. We additionally supported the proposed affective (emotions) and motivational (identification) processes that we have argued underlie the incremental threat effect. Further research on exposure to out-groups, evaluation and threat will help to develop a greater understanding of the dynamics of attitude formation and change, and the consequences and caveats this has for threat and identity in intergroup contexts.

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