Multilevel Affective Counter-Conditioning of Prejudice and Stereotyping

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Abstract

This experiment investigates the impact of affective counter-conditioning on both explicit and implicit measures of prejudice and stereotyping. Participants had to perform previous to and following a counter-conditioning session, different tasks explicitly and implicitly assessing prejudice and stereotyping. They were assigned to one of four counter-conditioning conditions: a propositional irrelevant counter-conditioning in which the out-group was associated with the definition of a positive word irrelevant to the intergroup context; a propositional relevant counter-conditioning in which the out-group was associated with the definition of a positive affect relevant to the intergroup context; a schematic counter-conditioning in which the out-group was associated with the induction of a positive affect; and a control condition in which the out-group was associated with neutral words. Results show that the propositional relevant counter-conditioning decreased prejudice and stereotyping, whereas the schematic counter-conditioning increased ethnocentric biases. Results also indicate that the control and propositional irrelevant conditioning manipulations had limited effect on ethnocentric biases. This pattern of results is discussed in terms of differences in the processing of emotional information.

Contents

Propositional relevant condition: emotion-related and positively valenced (see Reyser, 1991).

1. affection
2. tendresse
3. attachement
4. attendrissement
5. amour
6. désir
7. attirance
8. amitié
9. attraction

Schematic Relevant Condition: idem

1. affection
2. tendresse
3. attachement
4. attendrissement
5. amour
6. désir
7. attirance
8. amitié
9. attraction

Appendix 6

Neutral or Positively Valenced French Words and Emotional Labels

Control condition: non emotion-related and neutral (see Leleu, 1987).

1. appartement
2. balle
3. bagage
4. bibliothèque
5. bougie
6. chemin
7. clé
8. colline
9. construction

Propositional irrelevant condition: non emotion-related and positively valenced (see Leleu, 1987).

1. soleil
2. délice
3. dynamisme
4. gain
5. guérison
6. harmonie
7. honnêteté
8. trésor
9. vacance

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After viewing an intense emotion-eliciting movie, this person has reported feeling

Non stereotypic emotions

1. Admiration
2. Desire

Emotions stereotypic for Belgians

1. Fear
2. Sadness

Emotions stereotypic for North Africans

1. Anger
2. Contempt

Appendix 5

Experimental Action Tendencies and Emotions for Belgians versus North Africans

After viewing an intense emotion-eliciting movie, this person has reported wanting to

Non stereotypic action tendencies

1. Approach others
2. Keep out of the situation
3. Laugh with others
4. Reject others
5. Confront the situation

Action tendencies stereotypic for Belgians

1. Hide from others
2. Conform with others' desires
3. Hide feelings
4. Keep at a distance
5. Protect others

Action tendencies stereotypic for North Africans

1. Show aggressiveness to others
2. Insult others
3. Show exuberance
4. Show excitement
5. Boil inwardly

Multilevel Affective Counter-Conditioning of Prejudice and Stereotyping

Background

The cognitive conception of ethnocentric biases assumes that prejudice and stereotypes result from the association of a series of cognitions to an out-group category. Indeed, ethnocentric biases (i.e., including prejudice and stereotyping) have long been defined as cognitive consequences of social categorization (Tajfel, 1969). Knowing that a person belongs to the out-group was supposed to be a necessary and sufficient condition for both prejudice and stereotyping to occur simultaneously.

Alternatively, the affective conception assumes that ethnocentric biases result from the association of a specific emotion to the out-group category. Theories of emotion in the field of ethnocentric biases have attempted to dissociate prejudice and stereotyping by defining prejudice as a social affect and stereotyping as a cognitive appraisal of the social situation (Mackie & Hamilton, 1993; Smith, 1993; Vanman & Miller, 1993). As such, knowing that a person belongs to the out-group involves the activation of separate affective and cognitive patterns of responses.

In line with the latter theoretical framework, it has been argued that affective processing of intergroup information is more automatic and corresponds to a better predictor of ethnocentric biases than cognitive processing of intergroup information. A broad range of empirical evidences has demonstrated that affect-related measures predicted cognitive evaluations (Dijker, 1987; Esses, Haddock, & Zanna, 1993; Philippot & Yabar, 2005; Philippot, Yabar & Bourgeois, in press; Stangor, Sullivan, & Ford, 1991; Yabar & Philippot, 2000) and behaviours (Breckler & Wiggins, 1989; Mackie & Hamilton, 1993; Zanna & Remple, 1988) better than cognition-related measures. Since affective processing of intergroup information has been shown to be more automatic and a better predictor of ethnocentric biases, one may argue that affective processing in a counter-conditioning manipulation should also be more efficient to reduce ethnocentric biases than cognitive processing in a counter-conditioning manipulation.

The purpose of this experiment was to address this question in a paradigm using a counter-conditioning of ethnocentric biases manipulation. Counter-conditioning of ethnocentric biases implies the association of a positively valenced unconditioned stimulus (UCS) with a social target, or conditioned stimulus (CS), in order to modify the pre-existing link between a negative association and the social target. By manipulating the nature of the UCS, two specific questions were addressed: (1) is associating emotional information to a social target group more prone to modify ethnocentric biases than associating non-emotional information? (2) do distinct levels of emotional processing have a differential impact on ethnocentric bias reduction?

To answer these questions, a review of empirical evidences in the field of ethnocentric bias conditioning would be provided, in an attempt to investigate likely mediating variables. The impact of different levels of emotional processing on prejudice and stereotyping reduction from the perspective of the dual-memory system model of emotion (Philippot, Schaefer, & Herbette, 2003) will then be discussed.

Counter-Conditioning of Ethnocentric Biases

Learning theories state that counter-conditioning involves both dimensions of frequency and quality (Hull, 1943; 1951; Thorndike, 1932). Indeed, the repeated association of a negative stimulus with an unconditioned positive stimulus is expected to trigger a positive response to the formerly negative stimulus (Hull, 1943; 1951; Thorndike, 1932). Along this line, social psychologists have attempted to manipulate prejudice toward a social stimulus by using a counter-conditioning paradigm. For instance, Staats and Staats (1958) instructed their participants to learn associations between two lists presented in parallel: a list of six national names and a list of positive, negative or neutral words. Two national names were systematically paired to neutral words, two other national names to positive words and the remaining ones to negative words. Results indicated that national names associated to positive words were rated as more positive and national names associated to negative words as more negative, than national names associated to neutral words. Furthermore, Parish, Shirazi and Lambert (1976) modified the negative attitude of White American children towards Vietnamese through counter-conditioning, by presenting slides of Vietnamese paired with positively evaluated words. Such a pattern failed to reach significance for African American slides, which could be due to the "over-anchorage" of negative attitudes towards African Americans as compared to Vietnamese. At that time, Vietnamese were a recent immigrant community in

North African expressers	
Expresser 1	
Joy	68.5
Anger	52.8
Fear	62.8
Sadness	57.1
Expresser 2	
Joy	82.8
Anger	52.8
Fear	65.7
Sadness	48.5
Expresser 3	
Joy	81.4
Anger	54.2
Fear	50.0
Sadness	62.8

Appendix 4

Attribution of the Correct Emotion to Emotional Facial Expressions

	Percentage of correct emotion attribution
Belgian expressers	
Expresser 1	
Joy	85.7
Anger	71.4
Fear	62.8
Sadness	62.8
Expresser 2	
Joy	58.5
Anger	48.5
Fear	54.2
Sadness	57.1
Expresser 3	
Joy	85.7
Anger	75.7
Fear	55.7
Sadness	48.5

the United States. Finally, Parish and Fleetwood (1975) observed that children's attitude became more favourable to African Americans as the number of conditioning trials increased. All together, these studies support the idea that prejudice and stereotypes can be altered by repeatedly pairing a social target with positive or negative unconditioned stimuli.

Nevertheless, these studies suffer from many limitations concerning the clarification of mediating variables involved or the processes possibly implicated in this type of counter-conditioning (Eagly & Chaiken, 1993). Firstly, since measures of stereotyping and prejudice were mostly explicit in those studies, the impact of social desirability could not be dissociated from the impact of conditioning. Participants may have expressed less prejudice after the conditioning session, because they were aware of the experimenter's goals to counter-condition their ethnocentric biases, instead of because their affective reactions to the target was actually changed (Fishbein & Ajzen, 1975; Kiesler, Collins, & Miller, 1969; Page, 1974; Weber & Cook, 1972). Secondly, in these studies, it is difficult to dissociate the impact of familiarization from the impact of conditioning. Indeed, conditioning implies that participants learn a new connection between a target and a trait or an affect (Hull, 1943; 1951; Thorndike, 1932). By contrast, familiarization only implies that participants are less reactive to a stimulus when the number of presentations of the aversive stimulus increases (Zajonc, 1968). A decrease in prejudice and stereotyping may have reflected habituation rather than actual conditioning in these studies, since social targets were repetitively presented along the conditioning task. Thirdly, it is difficult to dissociate the mood impact from the conditioning impact in these studies. Indeed, the observed positive conditioning may have been induced by a mood improvement rather than by a change in the cognitive associations between the stimulus and the positive affective reaction. Indeed, it has been shown that participants in a good mood are prone to view people and events more positively than participants in a bad mood (Shaller & Cialdini, 1990). Further, a positive mood has been shown to prime positive material in memory, which biases the processing of subsequently encountered social stimuli in a mood-congruent way (Isen, 1987; Niedenthal & Cantor, 1986; Schwarz, 1990).

In summary, these considerations stress the necessity to further explore the differences existing between cognition- and affect-related counter-conditioning manipulations. Indeed, a major difficulty in these studies lies in the fact that the UCS was a series of positively versus negatively valenced words (e.g. "sunshine", "holiday", etc.) and that it is unclear whether this type of UCS activates emotional feelings or only positively versus negatively valenced semantic knowledge about the word.

Schematic and Propositional Conditioning of Prejudice and Stereotyping

Some may argue that a bipolar distinction between cognitive and affective processing of information is actually too simplistic. Indeed, the affective components involved in ethnocentric biases may reflect a broad range of affective phenomena, including different types of affective information processing.

Firstly, according to Bodenhausen (1993), one should not only take the incidental affects into account (i.e., affect unrelated to the target or mood) but also the integral affects (i.e., affect related to the target) when using an affective counter-conditioning manipulation. In other words, one should not only manipulate positively valenced words, which are not relevant to intergroup relations (i.e., incidental affects), but also positively valenced words that are relevant to intergroup relations (i.e., integral affects).

Secondly, a series of multilevel models of emotions have assumed the existence of two levels of emotional processing: (i) the first level corresponds to the activation of a "hot" emotion, which is characterized by its automaticity, (ii) the second level corresponds to the activation of "cold" cognition, which processes more effortful information in a rational and aware mode (Johnson & Multhaup, 1992; Leventhal & Scherer, 1987; Power & Dalgleish, 1997; Teasdale & Barnard, 1993). These models postulate that emotional information can be processed at different levels and that the outputs of each of these levels correspond to qualitatively distinct emotional responses (Clore, Wyer, Dienes, Gasper, Ghom, & Isbell, 2001; Innes-Ker & Niedenthal, 2002). The dual-memory system model of emotion (Philippot, Schaefer, & Herbette, 2001) corresponds to an integration of these multilevel models into a testable framework (see fig. 1). This model mainly proposes that emotional information can be stored and processed by two distinct systems: (a) the schematic system and (b) the propositional system. Firstly, the schematic system is responsible for the activation of an emotion per se, meaning that there is a univocal relation between the activation of the schematic system and actual "hot" emotional response (e.g., "I like North Africans"). The schematic system operates through automatic and implicit processes. It does not need consciousness or important cognitive resources to operate. The component units of the schematic system are emotional schemata involving information abstracted from recurrent similar emotional experiences (e.g., the repeated experience of positive interactions with North Africans). There is a schema for each kind of emotion and their content can be viewed as holistic themes (i.e., Core Relational Themes; Smith & Lazarus, 1993). Secondly, the propositional system is responsible for the processing of declarative knowledge about emotions. It operates by using a controlled and self-aware mode. The propositional system is responsible for (1) the explicit

Appendix 3

Attribution of a Group Membership to the Expressers

	Percentage of group membership correct recognition
Belgians expressers	
Expresser 1	100
Expresser 2	100
Expresser 3	93
North African expressers	
Expresser 1	100
Expresser 2	93
Expresser 3	93

Appendix 2

Attribution of a Positive versus Negative Value to Neutral Facial Expressions

Percentage of attribution for positive versus negative valence		
Belgians expressers		
Expresser 1	46	53.3
Expresser 2	46	53.3
Expresser 3	53.3	46
North African expressers		
Expresser 1	46	53.3
Expresser 2	53.3	46
Expresser 3	46	53.3

conscious analysis of the emotional situations (e.g., "I am scared because I just saw a Grizzly"), and for (2) the planning of voluntary action (e.g., "I need to run away"). The representation units of this system are discrete concepts organized in a semantic propositional structure.

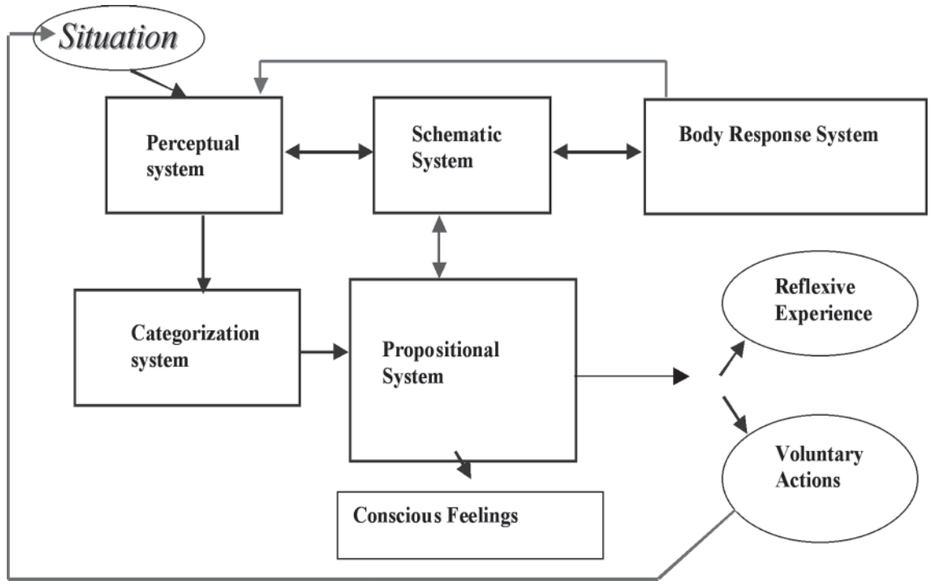


Fig. 1: *The dual-memory system model of emotions (Philippot, Schaefer & Herbette, 2001)*

In summary, dissociating the levels of emotional processing in counter-conditioning of ethnocentric biases offers the possibility to explore the nature of these levels of knowledge. When using an affective counter-conditioning manipulation, one should include different affective conditions. Firstly, one should not only manipulate positively valenced words which are not relevant to intergroup relations, but also positively valenced words that are relevant to intergroup relations. Secondly, one should not only have a condition in which the US activates "cold" propositional level of emotions associated with the target, but also a condition in which the US activates "hot" schematic level of emotions associated with the target.

Experiment

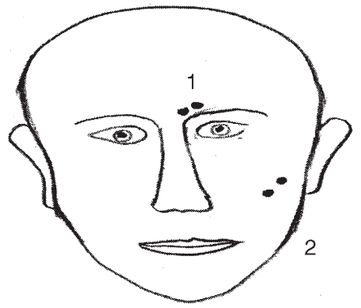
The following experiment aims at testing the impact of different levels in affective counter-conditioning on prejudice and stereotyping toward a group negatively evaluated by Belgian nationals: North Africans. This group represents an important immigrant community in Belgium and is generally perceived as threatening and aggressive (Philippot & Yabar, 2005; Philippot, Yabar & Bourgeois, in press; Yabar & Philippot, 2000). A three stages counter-conditioning paradigm was used, involving a pre-conditioning stage, a conditioning stage and a post-conditioning stage.

In the pre- and post-conditioning stages, several explicit and implicit measures of prejudice and stereotyping were used. In the conditioning stage, the out-group CS was repeatedly associated with different types of UCS. The type of UCS varied along three dimensions: (1) emotional versus non-emotional (2) schematic versus propositional (3) integral affect (i.e. relevant to intergroup relations) versus incidental affect (i.e. irrelevant to intergroup relations). The experiment included four conditions: (a) a condition with repeated associations of neutral words to the out-group (i.e., control condition), (b) a condition with repeated associations of positive words not related to the affective reactions toward the out-group (i.e., propositional irrelevant condition), (c) a condition with repeated associations of positive affective words related to the affective reactions toward the out-group (i.e., propositional relevant condition), and (d) a condition with repeated associations of actual activation of positive affective feelings related to the out-group (i.e., schematic condition). Dimension (1) was tested by the comparison between the conditions (a) and (b) versus conditions (c) and (d). Dimension (2) was tested by the comparison between (d) and (c). Finally, dimension (3) was tested by the comparison between (b) and (c).

A gradation in the effect of counter-conditioning was expected depending on the nature of the affective processing manipulation. Firstly, schematic conditioning was expected to decrease prejudice and stereotyping more remarkably than propositional relevant and propositional irrelevant conditioning. Indeed, schematic conditioning is directly linked to the activation of an affective feeling, whereas both propositional relevant and irrelevant conditionings refer to declarative information processing (Philippot, Schaefer, & Herbette, 2001), and it has been shown that affect-related measures predicted out-group evaluations (Dijker, 1987; Esses, Haddock, & Zanna, 1993; Stangor, Sullivan, & Ford, 1991; Philippot & Yabar, 2005; Philippot, Yabar & Bourgeois, in press; Yabar & Philippot, 2000) and behaviours to the out-group (Breckler & Wiggins, 1989; Mackie & Hamilton, 1993; Zanna & Remple, 1988) better than cognition-related measures. Secondly, propositional relevant conditioning was

Appendix 1

Sites for the placement of electrodes on the Corrugator Supercilii (1) and Zygomaticus major (2)



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expected to be more efficient than propositional irrelevant conditioning. Indeed, the propositional irrelevant system includes declarative information less pertinent to out-group relevant emotions than the propositional relevant one (Bodenhausen, 1993).

Mediating variables are also investigated in this experiment to overcome the limitations previously highlighted in the literature. Firstly, the impact of conditioning versus social desirability is addressed by asking participants to perform tasks assessing prejudice and stereotyping at both an explicit (i.e., susceptible to social desirability) and an implicit level (i.e., not susceptible to social desirability). Secondly, a neutral manipulation (i.e., stimuli repeatedly presented with a neutral unconditioned stimuli) is included in the design to check for a potential habituation effect. Thirdly, the mood of the participants was assessed after each conditioning trial to control mood-congruent processing following each conditioning session.

Method

Participants

Sixty-five psychology students of the University of Louvain (Belgium) took part in the experiment. They were Belgian nationals who agreed to participate and received course credit in exchange to their participation. The average age of the sample was 19.6 years (SD = 1.6). Participants were randomly assigned to each of the four conditions: control (n = 16), propositional irrelevant (n = 17), propositional relevant (n = 14) and schematic (n = 18).

Apparatus and Stimuli

The assessments and conditioning stages of the experiment relied on the use of different types of stimuli and apparatus, including electromyographic (EMG) activity, presentation of Belgians' versus North Africans' facial expressions, presentation of judgment items (i.e., emotions and action tendencies) stereotypic of the in-group versus those of the out-group, and presentation of words versus emotional labels.

Firstly, the facial activity of the participants was assessed using two pairs of surface electrodes (i.e., bipolar application) at the sites of "Corrugator Supercilii" and "Zygomaticus Major" (see Appendix 1). Applications of electrodes were calculated according to Fridlund and Cacioppo (1986). All

pairs were referenced to a forehead electrode placed near the midline. Med. Associates electrode electrolyte (TD41) was used as a conducting medium and the skin was cleansed with PDI disposable electrode prep pads (70% alcohol and pumice). A Contact Precision Instruments (CPI) system was used to amplify the raw EMG signals; a notch filter was used to reduce 50 HZ electric noises. The EMG was then passed through CPI integrators with a constant time of 200 milliseconds (ms). The smoothed EMG signal was sampled at 10 Hz and stored. Participants were told that these electrodes assessed the activity of their frontal lobes. This cover story was created because EMG has been shown not to be susceptible to the problems encountered in self-report measures (i.e., social desirability) when participants are unaware that their facial muscles are being recorded (McHugo & Lanzetta, 1983).

Secondly, in-group versus out-group facial expressions were selected from a preliminary pre-test (Philippot & Yabar, 2005; Philippot, Yabar & Bourgeois, in press; Yabar & Philippot, 2000). Sixteen young adult male expressers were selected on the basis of their group membership with half of the sample being Belgians and the other half being North Africans. They were paid the equivalent of US$5 and asked to pose neutral facial expressions. Belgian and North African facial expressions were taken with a digital camera and transformed, using PhotoshopTM. The face outline of each expresser was extracted from its natural background and disposed in a white background. The digitized colour photographs were also transformed into black and white (16-color grey scale palette) and the picture size was standardized (46 x 69 mm). The valence of the expresser's facial displays and the visibility of their group membership were pre-tested in counterbalanced order. Photographs were presented on a computer screen during 500 ms and 15 psychologists working in the field of emotion judged whether the valence of the facial expressions was positive or negative. They were also instructed to judge whether the expresser was a Belgian or a North African. The faces used in the experimental task were selected when being judged positively valenced as frequently as negatively valenced and when they were perfectly recognized as belonging to one group or the other (see Appendices 2, 3 and 4).

Thirdly, action tendencies and emotions stereotypic of Belgians and North Africans were selected from the results of a preliminary study (Philippot & Yabar, 2005; Philippot, Yabar & Bourgeois, in press; Yabar & Philippot, 2000). A series of action tendencies (Frijda, Kuipers, & Ter Schure, 1989) and emotions (Differential Emotion Scale; Izard, Dougherty, Bloxom, & Kotsch, 1974) were presented to 143 Belgian students. They were asked to evaluate the judgment items most stereotypic of Belgians and North Africans. Items that significantly differed as a function of the target group were pre-tested regarding the time needed to read and understand them. Twenty-three

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psychology students had to read the judgment items on a computer screen and to click the keyboard when they believed they had understood it. Based on this pre-test, ten action tendencies (i.e., five stereotypic of the in-group and five stereotypic of the out-group) and four emotions (i.e., two stereotypic of the in-group and two stereotypic of the out-group) were selected for the present study, when their comprehension time did not significantly differ from the average comprehension time for action tendencies (M = 1586 ms, SD = 543) and emotions (M = 1550, SD = 535). Special attention was also given to the valence of the items in order not to observe an imbalance of positively versus negatively evaluated items for one group or the other (see Appendix 5).

Finally, the words (UCS) associated with the out-group or in-group faces (CS) in the control and the propositional irrelevant conditioning manipulations were selected from a preliminary study controlling the valence and the affective value of a large set of French words (Leleu, 1987). In the control condition, the selected words corresponded to those which were (a) unrelated to any emotional label, and (b) judged neutral on a 7-point scale ranging from "really positive" to "really negative". In the propositional irrelevant condition, the selected words corresponded to those, which were (a) unrelated to any emotional label, and (b) judged as really positive on the same 7-point scale. The selected affective labels were the same in the propositional relevant and the schematic conditioning manipulations. They referred to a "core relational theme" (Smith & Lazarus, 1993) very untypical of encounters with North Africans. Nineteen students had to rate on a 5-point scale to what extent five emotional themes (i.e., other-blame, self-blame, threat, attachment, success and loss) were related to encounters with North Africans. Results showed that the core relational theme that related most with out-group encounters was "threat" and the most unrelated theme was "attachment". Thus, the emotional labels for schematic and propositional relevant conditions were words all strongly associated with attachment and affection (Reyser, 1991). All selected words and emotional labels are presented in Appendix 5.

Procedure

Participants were allegedly told that the experiment was designed to test memory performances in a social context and in relation to the activity of their frontal lobes. Actually, they had to perform a series of tasks designed to assess ethnocentric biases toward North Africans previous to and following a conditioning session.

In both pre- and post-conditioning sessions, some tasks assessed prejudice (i.e., affective reactions to a social target) and others assessed stereotyping (i.e., typical affective characteristics associated with a social target). Some tasks assessed ethnocentric biases in an explicit way (i.e., controlled pattern) and others in an implicit way (i.e., uncontrolled pattern). Instructions and tasks involved in this experiment were successively presented on a computer screen by using MEL™.

In the pre-conditioning session, participants were invited to express their affective attitude towards Belgians and North Africans. Participants had to rate their attitude toward both ethnic groups on a 7-degree affective thermometer (Abelson, Kinder, Peters, & Fiske, 1982) ranging from 1 (i.e., totally dislike) to 7 (i.e., totally like) by using the keyboard of a computer. This measure was designed to assess explicit affective prejudice (Greenwald & Banaji, 1995; Nisbett & Wilson, 1977).

Secondly, participants' EMG activity was recorded while looking at three in-group and three out-group neutral faces on the computer screen. Each stimulus was displayed during a 10-second period of time. The activity from the "Corrugator Supercilii" (i.e., a marker for negative affective reaction) and the "Zygomaticus Major" (i.e., a marker for positive affective reaction) was recorded between the second and the seventh second of the stimulus presentation. This measure was designed to assess implicit affective prejudice (Cacioppo, Martzke, Petty, & Tassinary, 1988; Vanman, Paul, Ito, & Miller, 1997; Yabar, Johnston, Miles, & Peace, in press).

Thirdly, participants had to decode in-group versus out-group facial expressions in terms of emotions or action tendencies stereotypic of the in-group versus out-group (Philippot & Yabar, 2005; Philippot, Yabar & Bourgeois, in press; Yabar & Philippot, 2000). Participants were told that their task consisted of attributing an affective reaction to the facial expression displayed by a Belgian or a North African expresser. They believed that photographs were taken from actual situations in which expressers were looking at emotion-eliciting video excerpts. Facial stimuli and judgement items were presented on the computer screen in random order. Facial stimuli were displayed during 500 ms, followed by a blank screen of 500 ms and judgement items were presented until the participant gave a response. Participants had to judge whether items were associated with the face presented and had to press a different key depending on whether faces and items were associated or not. The attribution of affective reactions stereotypic of out-group members to out-group members was designed to assess explicit stereotyping. Indeed, participants can control the impact of stereotypes in such an attribution task if they want (Philippot & Yabar, 2005; Philippot, Yabar & Bourgeois, in press; Yabar & Philippot, 2000).

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Fourthly, participants' reaction time, while decoding facial expressions in the previously described task, was recorded. Judgement latencies are expected to assess implicit stereotyping. Indeed, a quick reaction time reflects the automatic application of stereotypes because of a high level of ethnocentric biases (Bargh, 1984; Fazio, Jackson, Dunton, & Williams, 1995; Greenwald & Banaji, 1995; Judd, Park, Ryan, Brauer, & Kraus, 1995).

In the conditioning session, participants were randomly ascribed to four different conditioning manipulations. Nine in-group faces and nine out-group faces were associated with different UCS, resulting in 18 conditioning trials. In the control, propositional irrelevant and propositional relevant conditions, participants had to give a dictionary-like definition of a series of words (UCS) repetitively associated to in-group versus out-group faces (CS). Faces were associated with neutral words (e.g., accommodation) in the control condition, to positively valenced words (e.g., sun) in the propositional irrelevant condition, and to positive emotional labels related to the theme of attachment (e.g., friendliness) in the propositional relevant condition. In the schematic condition, participants were asked to describe a prototypical situation relating to the emotional label (e.g., friendliness). They had to describe this situation as if they were experiencing it focusing on the feelings aroused in such a situation. Participants were instructed to rate their mood following each conditioning trial, on a 7-point scale ranging from 1 (i.e., negative mood) to 7 (i.e., positive mood).

In the post-conditioning session, participants had to perform tasks similar to those used in the pre-conditioning session. Participants were invited once again to rate their affective attitude towards Belgians and North Africans (i.e., explicit affective prejudice) and their EMG activity when facing in-group versus out-group neutral faces was recorded (i.e., implicit affective prejudice). They were asked to decode in-group versus out-group facial expressions in terms of emotions or action tendencies stereotypic of the out-group or not (i.e., explicit stereotyping). Their judgment latencies in performing this decoding task were recorded (i.e., implicit stereotyping).

Results

A series of scores were computed to assess pre- and post-conditioning measures of (a) explicit positive attitude, (b) implicit positive EMG activity, (c) explicit attribution of affective reactions stereotypic of the out-group to out-group members, and (d) implicit reaction time during this task. It should be noted that, while stimuli of both in-group and out-group were presented to warrant the intergroup nature of the tasks, all the scores presented in this section were computed for North African targets only.

Explicit Affective Prejudice

A score of positive attitude toward the out-group was created for both the pre- and post-conditioning sessions on the basis of the participants' answers to the affective thermometer (Abelson, Kinder, Peters, & Fiske, 1982). A one-way ANOVA was computed to check for differences between groups before the conditioning session, but no difference was significant, $F(3,61) = 0.22$, $p < .88$. Then, means of positive attitude were analyzed in a 2 (pre- and post-conditioning session) X 4 (control, propositional irrelevant, propositional relevant and schematic conditioning) mixed ANOVA, with the conditioning manipulation as a between-subject variable. A significant interaction between the session and the conditioning manipulation was observed, $F(3,61) = 2.61$, $p < .05$. Post-hoc analyses revealed that variations between pre- and post-conditioning only reached significance for the propositional relevant manipulation, $F(1,13) = 3.85$, $p < .05$. Participants reported a significantly more positive attitude following this manipulation (Ms = 4.50 and 5.07, respectively) than following the other manipulations. Means and standard deviations for positive attitude toward out-group members are presented in Table 1.

Table 1: Reported attitude in the pre-conditioning and post-conditioning sessions

	Classical Conditioning			
	Control	Propositional irrelevant	Propositional relevant	Schematic
Pre-conditioning session	4.75a (.26)	4.47a (.25)	4.50a (.28)	4.55a (.25)
Post-conditioning session	4.37a (.29)	4.94a (.28)	5.07b (.31)	4.61a (.28)

Note: Higher figures indicate more positive attitude. Means with different subscripts differ at the .05 level (pre- to post-conditioning comparisons).

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The results support the assumption that only conditioning accounts for the observed effects. Indeed, an impact of the propositional relevant conditioning is observed on both explicit (i.e., reported affective attitude and facial expression decoding) and implicit measures (i.e., EMG recording). Thus, this effect cannot be explained in terms of desirability biases. Facial electromyography is not susceptible to social desirability, especially when participants are unaware that their facial muscles are being recorded (McHugo & Lanzetta, 1983). In addition, the results observed in the propositional relevant condition cannot be explained in terms of habituation or familiarization, as no similar effects are reported in the control condition. An accentuation of the readiness to apply stereotypes in facial expression decoding is only observed in the control condition. Finally, the underlying processing cannot be explained in terms of mood improvement, since no significant difference in reported mood is observed in the propositional relevant conditioning as compared to the control condition.

In sum, our results suggest that considering ethnocentric biases from an emotional information-processing perspective is heuristic. The important aspects to take into account in designing any intervention aiming at improving intergroup relations are both the affective component of ethnocentric biases and its processing style. Indeed, it stems from our results that when a positive emotion is elicited during the conditioning stage, ethnocentric biases increase, whereas when only a semantic processing is activated during the conditioning phase, ethnocentric biases decrease. Thus, the distinction between schematic and propositional processing involved in the dual-memory system model of emotion (Philippot, Schaefer, & Herbette, 2001) seems to be relevant in an intergroup context. Indeed, counter-conditioning was more likely to have a moderating impact on ethnocentric biases when manipulating the discrete concepts associated with the target out-group than when manipulating the emotional schema associated with this out-group.

Implicit Affective Prejudice

Estimates of positive facial reactions to North Africans were obtained by subtracting the standardized "Corrugator Supercilii" measure from the standardized "Zygomaticus Major" measure for both the pre- and post-conditioning sessions. A one-way ANOVA was performed to check for differences between groups before the conditioning session. No difference was observed, $F(3,61) = 1.28$, $p < 28$. Means of positive facial reactions were then submitted to a 2 (pre- and post-conditioning session) x 4 (control, propositional irrelevant, propositional relevant and schematic conditioning) mixed ANOVA, with the conditioning manipulation as a between-subject variable. A marginal trend was observed for the interaction between the session and the conditioning manipulation, $F(3,54) = 1.92$, $p < .13$. Post-hoc analyses revealed that variations between pre- and post-conditioning marginally reached significance for the propositional relevant and the schematic manipulations, $F(1,12) = 3.29$, $p < .09$, $F(1,15) = 2.45$, $p < .10$, respectively. Participants tended to display a more positive facial reaction after propositional relevant conditioning (*M*s = 0.11 and 0.30, respectively), whereas the reverse pattern was reported after schematic conditioning (*M*s = 0.32 and -0.31, respectively). Means and standard deviations for positive facial reactions toward out-group members are presented in Table 2.

Table 2: Composite score of EMG activity ("Zygomaticus Major"- "Corrugator Supercilii") in the pre-conditioning and post-conditioning sessions.

	Classical Conditioning			
	Control	Propositional irrelevant	Propositional relevant	Schematic
Pre-conditioning Session	.17 (.27)	.28 (.23)	.11 (.26)	.32 (.22)
Post-conditioning Session	.12 (.28)	.01 (.25)	.30 (.27)	.31 (.24)

Note: Positive figures indicate more positive reaction.

Scores of attribution to out-group members of emotions stereotypic of the out-group were created for both the pre- and post-conditioning sessions. A one-way ANOVA was computed to check for differences between groups before the conditioning session. No difference was observed, $F(3,61) = 1.75$, $p < .26$. Then, means of stereotypic attributions to out-group members were analyzed in a 2 (pre- and post-conditioning session) X 4 (control, propositional irrelevant, propositional relevant and schematic conditioning) mixed ANOVA, with the conditioning manipulation as a between-subject variable. A significant interaction between the session and the conditioning manipulation was observed, $F(3,61) = 5.23$, $p < .003$. Post-hoc analyses showed that variations between pre- and post-conditioning reached significance for the propositional relevant and the schematic manipulations, $F(1,13) = 4.98$, $p < .04$, $F(1,15) = 14.76$, $p < .001$, respectively. Participants attributed less frequently judgment items stereotypic of North Africans to North Africans following the propositional relevant conditioning session (*M*s = 0.03 and -0.16, respectively). But once again, the reverse pattern was observed in the schematic condition (*M*s = -0.07 and 0.10, respectively). Means and standard deviations for stereotypic attributions to out-group members are presented in Table 3.

Table 3: Attribution of emotions and action tendencies stereotypic of North Africans in the pre-conditioning and post-conditioning sessions

	Classical Conditioning			
	Control	Propositional irrelevant	Propositional relevant	Schematic
Pre-conditioning Session	.08a (.05)	.04a (.05)	.03a (.05)	.07b (.05)
Post-conditioning Session	.01a (.07)	.04a (.06)	.16b (.07)	.10a (.06)

Notes: Positive figures indicate more stereotypic judgment. Means with different subscripts differ at the .05 level (pre- to post-conditioning comparison).

in this condition would have processed information in a more automatic and holistic way than participants in the propositional condition, and automatic processing has been shown to be generally linked to increased stereotyping and prejudice (Petty & Cacioppo, 1986).

Secondly, the accentuating effect of the schematic conditioning may be explained in terms of a defence mechanism. When one comes to feel a positive emotion (e.g., empathy or sympathy) toward an out-group member and when this feeling is incompatible with one's beliefs (e.g., out-group members deserve prejudiced responses, because they are aggressive), one may reinforce intergroup biased responses to support the antagonism and avoid positive reactions. In line with this hypothesis, people have been shown to deny to out-group members the likelihood of displaying secondary emotions, supposedly to favour in-group members by contrast (Leyens, Paladino, Rodriguez-Torres, Vaes, Demoulin, Rodriguez-Perez, & Gaunt, 2000). Thus, positive emotions associated with out-group members may increase the perceived similarity between in-group and out-group members, which may be perceived as a threat and yield to increased discrimination (Jetten, Spears, & Manstead, 1999).

It is important to control for potential mediating variables in counter-conditioning of prejudice and stereotyping (Eagly & Chaiken, 1993). Firstly, participants may express less prejudice following conditioning, because they want to fit with the experimenter's goals and not because their affective reactions toward the target have actually changed (Fishbein & Ajzen, 1975; Kiesler, Collins, & Miller, 1969; Page, 1974; Weber & Cook, 1972). Secondly, because social targets are repetitively presented along the conditioning task, a decrease in prejudice and stereotyping may reflect a habituation effect rather than an actual conditioning (Zajonc, 1968). Thirdly, conditioning effect on ethnocentric biases may be related to an improvement of mood rather than to a change in knowledge association. Indeed, participants in a good mood have been shown to view people and events more positively (Shaller & Cialdini, 1990), or a positive mood may prime positive material in memory (Isen, 1987; Niedenthal & Cantor, 1986; Schwarz, 1990). Accordingly, this experiment addressed the impact of conditioning versus social desirability by assessing ethnocentric biases both at the explicit and implicit level. It also explored whether the impact of the manipulation was related to conditioning versus familiarization by including a control condition within the design. Finally, this experiment controlled the participants' reported mood by instructing them to rate their mood following each conditioning trial. In our experiment, only propositional relevant conditioning had a moderating impact on ethnocentric biases.

Secondly, and congruent with our expectations, data suggest a positive impact of the propositional relevant conditioning manipulation (i.e., affective knowledge). Propositional relevant conditioning improved participants' reported attitude towards North Africans (i.e., explicit prejudice), increased positive facial activity (i.e., implicit prejudice), decreased stereotype application in the attribution of emotions and action tendencies to North Africans (i.e., explicit stereotyping), and limited the decrease of judgement latencies generally observed subsequent to the conditioning session (i.e., implicit stereotyping). Such a positive impact of the propositional relevant conditioning manipulation supports an appraisal perspective on ethnocentric biases. Indeed, Smith (1993) has advocated that prejudice is a social affective reaction determined by intergroup appraisals in the sense that appraisals give an emotional meaning to the intergroup situation. If ethnocentric biases are determined by intergroup appraisals, persuasive material directed at a specific appraisal level (i.e., propositional relevant) might then be more effective than material directed at a general knowledge level (i.e., propositional irrelevant). For instance, when an out-group is viewed as threatening, its peaceful intentions (i.e., emotional knowledge related to the out-group target) may have to be stressed to change the appraisals that drive intergroup emotions instead of the idea that out-group members are intelligent (i.e., general knowledge unrelated to the out-group target). In line with this conception, the results show that the manipulation of the affective knowledge associated with the out-group (i.e., appraisal level) has a clear moderating impact on ethnocentric biases at both explicit and implicit levels.

Thirdly and incongruent with our expectations, the schematic conditioning manipulation (i.e., affective induction) increased the amount of ethnocentric biases. Schematic conditioning decreased the positive facial activity of the participants (i.e., implicit prejudice) and increased stereotyping in the attribution of emotions and action tendencies to North Africans (i.e., explicit stereotyping). This pattern of results is incongruent with the assumption that the more a positive emotion is activated in an intergroup context the more ethnocentric biases decrease.

Two explanations can account for this result. Firstly, it can be argued that the schematic counter-conditioning manipulation not only associates a positive affect with the social target group. It also activates a processing mode, which later influences the performances of the participants in the post-conditioning stage. In other words, participants assigned to the schematic condition may have maintained a schematic processing mode when completing the tasks designed to assess prejudice and stereotyping following the conditioning stage. Schematic processing is an automatic and holistic mode of processing as compared to propositional processing. Thus, one may argue that participants

Implicit Stereotyping in Facial Expression Decoding

After a logarithmic transformation, scores of judgment latencies for the attribution of items stereotypic of the out-group to out-group members, were calculated for both the pre- and post-conditioning sessions. A one-way ANOVA was computed to check for differences between groups before the conditioning session. No difference was observed, $F(3,61) = 1.12$, $p < .34$. Then, mean latencies of stereotypic attribution to out-group members were submitted to a 2 (pre- and post-conditioning session) X 4 (control, propositional irrelevant, propositional relevant and schematic conditioning) mixed ANOVA, with the conditioning manipulation as a between-subject variable. A significant interaction between the session and the conditioning manipulation was observed, $F(3,61) = 5.23$, $p < .003$. Post-hoc analyses showed that variations between pre- and post-conditioning reached significance for the control, $F(1,15) = 5.18$, $p < .03$, and the propositional irrelevant, $F(1,15) = 14.76$, $p < .0001$, manipulations. Participants attributed more readily judgement items stereotypic of North Africans to North Africans following these two types of conditioning (*M*s = 2.34 and 2.11, 2.33 and 2.16, respectively). Means and standard deviations for latencies in stereotypic attributions to out-group members are presented in Table 4.

Table 4: Judgment latencies for the attribution of emotions and action tendencies stereotypic of North Africans in the pre-conditioning and post-conditioning sessions.

	Classical Conditioning			
	Control	Propositional irrelevant	Propositional relevant	Schematic
Pre-conditioning Session	2.34a (.11)	2.33a (.11)	2.08a (.12)	2.28a (.11)
Post-conditioning Session	2.11b (.11)	2.16b (.10)	2.01a (.11)	2.14a (.10)

Note: Means with different subscripts differ at the .05 level (pre- to post-conditioning comparisons).

Reported Mood

In order to assess the differential effect of conditioning manipulations in terms of affective induction, a mean score of affective induction was computed on the basis of the reports made by participants following the trials 3 to 7. The first two trials were removed because of the time necessary for a mood manipulation to be effective. The last two trials were removed because mood response tends to extinguish along with manipulation repetition. A one-way ANOVA was computed to explore differences in affective induction after the conditioning session. No difference was observed, $F(3,61) = 1.51$, $p < .22$. However, post-hoc analyses showed that variations between the control and the other conditioning manipulations reach significance for the schematic manipulation, $F(3,61) = 1.51$, $p < .04$. The pattern of means show that participants report a more positive induction in the schematic condition than in the control, propositional irrelevant and propositional relevant conditions (Ms = 5.30, 4.42, 4.49 and 4.98, respectively). Means and standard deviations for latencies in stereotypic attributions to out-group members are presented in Table 5.

Table 5: Reported positive mood as a function of the conditioning manipulation

	Classical Conditioning			
	Control	Propositional irrelevant	Propositional relevant	Schematic
Reported mood (Trials 3 to 7)	4.42a (1.61)	4.49a (1.31)	4.98b (1.11)	5.30c (0.96)

Note: Higher figures indicate more positive mood. Means with different subscripts differ at the .05 level (between conditioning condition comparisons).

Discussion

This experiment was designed to explore the nature of the affective system involved in the counter-conditioning of prejudice and stereotyping. It also aimed at overcoming limitations highlighted in previous literature.

Regarding the nature of an affective system involved in the counter-conditioning of prejudice and stereotyping, the schematic and propositional relevant conditioning manipulations were expected to decrease stereotyping and prejudice more efficiently than the propositional irrelevant and control ones. Indeed, these manipulations relied on the affective component of ethnocentric biases. The schematic conditioning manipulation was expected to moderate prejudice and stereotyping more efficiently than the propositional relevant conditioning manipulation, because it actually elicited an emotion.

The pattern of results was only partially consistent with these expectations. Firstly, the absence of effect in the propositional irrelevant condition was unexpected in regard to the previous literature on ethnocentric bias counter-conditioning. Indeed, associating an out-group target with a valenced stimulus has been shown to modify the evaluations of meaningful words (Staats, Staats, & Crawford, 1962), non words (Cacioppo, Marshall-Goodell, Tassinary, & Petty, 1992), national names (Staats & Staats, 1958) and ethnic communities (Parish, Shirazi, & Lambert, 1976). To explain this unexpected result, it can be argued that changing a well-established evaluation of a well-known ethnic group might be more difficult than changing the evaluation of a simple word or a new immigrant community (Vanman & Miller, 1993). Indeed, prejudice toward a well-known group may be acquired through social learning phases frequently repeated along life. Consequently, such a well-established social learning may be highly "anchored" in cognitive structures (Bargh, 1994) and a large number of conditioning trials may be necessary to modify it (Vanman & Miller, 1993). Two empirical evidences collected in the United States support this hypothesis. Parish, Shirazi and Lambert (1976) observed that conditioning manipulation was efficient for Vietnamese targets (i.e., a newer immigrant community) but not for African American targets (i.e., a well-established community). Parish and Fleetwood (1975) only succeeded in changing prejudice towards African Americans when drastically increasing the number of conditioning trials. It may thus be advocated that the lack of effects reported in our propositional irrelevant manipulation results from the low number of conditioning trials involved in it, as prejudice towards North Africans is well-established in Belgium.