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Group Processes Intergroup Relations 2009 12: 381
DOI: 10.1177/1368430209102849

The online version of this article can be found at:
http://gpi.sagepub.com/content/12/3/381
The Impact of Music on Automatically Activated Attitudes: Flamenco and Gypsy People

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The two studies reported in this article agree in demonstrating that activating a positive side of the stereotype of a traditionally prejudiced group could be a useful strategy to improve the implicit attitude toward that group. The goal of the current research was to explore whether activating the present association between Flamenco music and Gypsy people would decrease the negative view of this group in Spain, using the IAT measure. In the first study, when a stereotype-consistent but positive feature of Gypsies (i.e. Flamenco music) was used as a positively valued attribute in the IAT measure, the IAT effect was lower than when a different positive stimulus was used (classical music clips). The findings of Study 2 showed that for the North African community—another highly discriminated group in Spain—the use of Flamenco or classical music clips did not have any effect on the implicit attitudes of participants toward them. The implications for attitudes toward discriminated groups and the use of music to improve intergroup relationships are discussed.

Keywords Flamenco, Gypsy people, IAT, implicit attitudes, intergroup relations, stereotypes

Social identity refers to the definition of self with reference to a social category, that is, a group or subgroup of society (Tajfel & Turner, 1979). According to social identity theory, people tend to assess themselves and their groups positively. However, each person has several cross-cutting social identities. Differential perceptions of self and others may emerge, depending on which identity is most salient (Ellemers, Spears & Dooijse, 2002; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). In the social identity approach, the broader social context must be taken into account to understand the impact of social groups on the way people see themselves and others. In the self-categorization tradition, the relevant social context has been proven to determine which categorization is most likely to provide a meaningful organization of social stimuli, and therefore which identity aspects function as guidelines for the perceptions and behaviour of those operating within that context (Ellemers et al., 2002).

The various social categories are associated with several defining attributes based on historical and social contextual evidence (Tajfel, 1981). Few studies have considered music as an...
attribute linked to social identities and intergroup relations. However, music can be strongly related to groups and is often associated with expression of social identities (e.g. religious, national, or ethnic ones). Preference for different musical styles can also be associated with other personal and social attributes. Indeed, Tekman and Hortaçsu (2002a) found that one of the perceived functions of music was to strengthen identity and sense of community. In another study, Tekman and Hortaçsu (2002b) explored how college students described fans of different musical styles. Factor and scale reliability analyses led to three basic dimensions to describe the listeners of these styles: the sophisticated, the sprightly, and the loser. According to respondents, different features were associated with fans of different styles to different extents. The sprightly dimension was best used to characterize listeners of pop, rock, and rap music—these are active styles that were appropriate for accompanying dance and movement; the sophisticated dimension was most closely associated with listeners of classical music—deserving appreciation although not strongly associated with identity—and Turkish folk music—meaning a desired identity with its positive characteristics; the loser dimension was most closely associated with listening to Arabesk—a specific Turkish style that has typically been associated with uneducated, alienated migrants living in large cities.

A study by Tarrant, Hargreaves, and North (2001) asked adolescents to rate the extent to which students at their own school (the ingroup) and a rival school (an outgroup) enjoyed each of six styles of music. As expected according to social identity theory, participants associated the ingroup with music that was valued positively by the ingroup (e.g. popular music, dance music) to a greater extent than they associated the outgroup with that same music. Moreover, they associated the outgroup more than the ingroup with music that was negatively valued (e.g. classical music, country music). Furthermore, stated differences between the preferences of the two groups were related to adolescents’ levels of self-esteem. At lower levels of self-esteem, adolescents tried to separate the ingroup from the outgroup more in terms of its stated degree of liking for negatively valued music; that is, they claimed that the outgroup liked that music more and the ingroup liked it less.

Bakagiannis and Tarrant (2006) have also shown that music can be used to improve intergroup relations. Their study was also consistent with the predictions of the common ingroup identity model (Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993). It showed that adolescents reported more positive intergroup perceptions when they believed the ingroup and outgroup had similar musical preferences compared to when they were told nothing about the groups’ preferences. In the condition in which adolescents believed that the two groups shared musical preferences, they reported that the outgroup perceived the ingroup more positively than in the condition when they were told nothing about the groups’ preferences.

**Flamenco music and Gypsy culture**

Flamenco music, which typically involves singers, dancers, guitarists and, most recently, percussionists, originated in the most economically and socially marginalized Gypsy community in Southern Spain, Andalusia (Aoyama, 2007). This kind of music could be considered a blend of Andalusian, North African, Latin American, and Indian influences (Leblon, 1995). The origin of Flamenco has long been attributed to the Gypsies who arrived in the Iberian Peninsula in the 15th century, although Flamenco in its current form emerged only in the late 19th century. Largely despised by the local population, Gypsies and Flamenco were discovered by foreigners who visited Spain in the early 19th century and this fact contributed to endowing Andalusians with a distinct and positive identity.

The huge development of tourism in Spain in the 1960s turned Flamenco from a ‘uniquely Andalusian cultural expression’ to a ‘national symbol’ (Malefy, 1998). By the early 1970s, tourism had become the leading industry in Spain, with Gypsies as one of its key tourist formulae (Aoyama, 2007). Today, many Flamenco artists
are well known both in Spain and abroad (i.e. guitar player Paco de Lucía, dancer Joaquín Cortés, etc.), and young people rate Flamenco music as one of the most positively valued (Megías & Rodríguez, 2003).

As stated above, Flamenco is especially linked to specific geographical areas (i.e. Andalusia) and also to some social groups—Gypsies. The Gypsy community in Spain is estimated to be about 500,000 people, which makes them one of the largest ethnic minorities in Spain. They are called ‘gitanos’ by the rest of Spaniards, and they, in turn, refer to non-Gypsy people as ‘payos’.

Traditionally, Gypsies have been the target of prejudice and discrimination in Spain (Gómez-Berrocal & Ruiz, 2001). The discrimination they have suffered may be due to the fact that for centuries they were the largest minority group in Spain. Although Spain has become one of the countries in Europe that receive the greatest influx of immigrants, the massive arrival of different groups of immigrants in Spain has not improved the Gypsies’ current situation. In fact, recent research still shows that there is a high level of prejudice toward Gypsy people among Spaniards. In fact, it is higher than the prejudice toward other numerous minorities such as North African or South American immigrants (Rodríguez-Bailón, Barranco, & Casado, 2000; Rodríguez-Bailón & Puertas, 2000; Rueda & Navas, 1996). The relationship between Gypsy and non-Gypsy people has been one of the most studied intergroup dynamics by sociologists, anthropologists and social psychologists in Spain.

Studies by Díez Nicolás (2005) show interesting data about the assessment of people from different groups (immigrants, Gypsy people, etc.) in several representative Spanish samples. He found that Spaniards evaluate foreigners—including immigrants—very positively, whatever their origin. However, they evaluate people from Western Europe and South America more positively than the rest of immigrant groups in Spain. The least liked minority groups are Arab-Muslims and Gypsies. Before 2004, the Gypsy community was the least valued group in Spain; after that, however, and probably as a consequence of the March 11 terrorist attacks in Madrid, this position has been taken by the Arab-Muslim group.¹

Implicit attitudes: Activation and change

Current research on attitudes normally distinguishes between deliberate, ‘explicit’ attitudes and automatic, ‘implicit’ ones (Gawronski & Bodenhausen, 2006). Explicit attitudes are usually considered to be deliberative, self-reported evaluations, whereas implicit ones are typically inferred from people’s performance on response latency measures, such as the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) or sequential priming tasks (Fazio, Jackson, Dunton, & Williams, 1995; Wittenbrink, Judd, & Park, 1997). Although more recent models have changed this view which clearly differentiates between explicit/implicit, automatic/controlled, or heuristic/rule-based ways of processing information (i.e. Bargh, 1994; Ferreira, Garcia-Marques Sherman, & Sherman 2006), most of them acknowledge the existence of some more controlled and conscious processes, while others acknowledge automatic and uncontrolled processes, in addition to combinations of both. In this article we will consider the feasibility of activating the positive side of a stereotype toward a traditionally discriminated group (Gypsy people) considering somehow automatic or implicit processes.

The Associative-Propositional Evaluation (APE) model proposed by Gawronski and Bodenhausen (2006) postulates that underlying implicit attitudes are associative processes. In other words, they are ‘automatic affective reactions resulting from the particular associations that are activated automatically when one encounters a relevant stimulus’ (p. 693). In these activation processes, it is not necessary to have a great cognitive capacity or an intention to evaluate an object (Cunningham, Raye, & Johnson, 2004). Besides, associative evaluations can be activated regardless of whether someone considers these evaluations to be accurate or not. According to the constructivist approach defended by the APE model and other researchers (e.g. Schwarz & Bohner, 2001; Tesser, 1978; Wilson & Hodges, 1992), pattern activation processes depend on:
(1) external input stimuli; and (2) the pre-existing structure of associations in memory. As such, different associative patterns may be activated by different sets of input stimuli for a given attitude object, and the same attitude object may be assessed differently depending on the specific context in which it is found (Barden, Maddux, Petty, & Brewer, 2004; Schaller, Park, & Mueller, 2003; Wittenbrink, Judd, & Park, 2001).

According to the APE model (Gawronski & Bodenhausen, 2006), changes in associative evaluations may reflect either (1) a growing change in the associative structure or (2) a temporal change in the activation of pre-existing patterns (Smith, 1996). The former involves learning a new evaluation, whereas the latter reflects the differential activation of old evaluations that are already stored in associative memory. In the present studies, we will try to change associative evaluations toward gypsies by activating a positive feature (Flamenco music) traditionally associated with this group. The model also specifies that the temporal changes in the pre-existing patterns presuppose: (1) that the attitude object is already represented in a multifaceted way; and (2) that the presence of specific context cues activates different associative patterns that reflect different subsets of this representation. Earlier studies have proven, for instance, that attitudes toward a specific group that are momentarily accessible depend on group members (e.g. if they are disliked or admired) (Dasgupta & Greenwald, 2001). They have also shown that exposure to a (negative) feature associated with a group (e.g. violent rap music with Black people) can lead to more negative associative evaluations of Black people (Rudman & Lee, 2002). In the present research, our starting point was that exposure to Flamenco music might activate a particular associative pattern of the representation of Gypsy people for participants, a pattern which involves a more positive evaluation of this group than is typically the case.

Wittenbrink et al. (2001) produced additional evidence for changes in pattern activation. They found that automatic affective reactions elicited by African American individuals were less negative when subjects were presented in a positive context (e.g. a family barbecue) than when they were presented in a negative context (e.g. a gang incident). According to Wittenbrink et al.’s results, the associative pattern activated by a given individual can vary depending on the context in which the individual is found. In this case it could be argued that the associative representation of African Americans is ambivalent, and that African Americans are associated with both positive and negative aspects. However, the activation of the different aspects depends on the particular context in which African-American individuals are found.

Although a large number of association-based measures of implicit social cognition have been developed (for a review, see Fazio & Olson, 2003), two implicit measurement approaches have become widespread: (1) the evaluative priming measure (Fazio et al., 1995); and (2) the Implicit Association Test (IAT; Greenwald et al., 1998). The assumption made by both measures is that attitude objects can be linked to evaluative associations in memory with varying strength. The IAT is based on the rationale that judgments congruent with participants’ implicit associations of a target category—such as Black people and negative adjectives—are easier to respond to, and therefore will elicit faster responses than incongruent ones, such as White people and negative attributes or Black people and positive ones. Stronger implicit associations should lead to, faster congruent than incongruent judgments, increasing the difference between congruent and incongruent response times. Therefore, the strength of implicit associations can be measured by studying the difference in the time that participants take to make these two types of judgment. This is called ‘the IAT effect’ (Hummert, Garstka, O’Brien, Greenwald, & Mellott, 2002).

We used the IAT in our study to measure implicit attitudes toward Gypsy people, activating a different mental representation of the Gypsy category in the participants by manipulating pleasant attributes. Several studies have also proven that differences in the interpretation of abstract category labels can lead to different affective responses in the IAT. According to Govan and Williams (2004), restricting the selection of stimuli to atypical ones may activate a
different mental representation or a temporary re-definition of the category. Thus, Govan and Williams (2004) found that the frequent implicit preference for flowers over insects could be changed when the stimuli in the IAT were unpleasant flowers (e.g. skunkweed) and pleasant insects (e.g. butterfly). According to Govan and Williams, the particular stimuli in the IAT determine how subjects interpret the various categories and influence their affective reactions to flowers and insects in general. This interpretation is also consistent with research by Foroni and Mayr (2005), who found that preference for flowers over insects could be reduced by using fiction (a post-nuclear war scenario in which flowers were generally contaminated and insects were the only type of safe food available), implying a reversal of the typical category evaluations.

Using the same approach, Steffens and Plewe (2001) used two gender IATs where all the participants were women. They kept constant stimuli for the target categories (male vs. female first names), but varied attribute stimuli (pleasant vs. unpleasant adjectives): in one condition, pleasant adjectives were associated with the female stereotype (e.g. BEAUTIFUL), whereas unpleasant adjectives were linked to the male one (e.g. BRUTAL). In the second condition, the stereotypical association of the attribute items was reversed, and pleasant adjectives bore male associations (e.g. LOGICAL), whereas unpleasant adjectives carried a female association (e.g. HYSTERICAL). When a stimulus representing a category is related to the other category being measured, it contains what is called a ‘cross-category association’. If these cross-category associations did not contribute to the IAT effect, the IAT effects of both conditions should be the same. Although the resulting implicit attitudes were positive toward women in both conditions (given the gender of the participants), the different stimuli led to a stronger IAT effect for the evaluatively congruent feminine-positive and masculine-negative condition than for the incongruent feminine-negative and masculine-positive condition. More recently, Bluemke and Friese (2006) have corroborated the assumptions that the cross-category associations affect the resulting IAT effect shown by Steffens and Plewe (2001).

In short, research has shown that IAT effects can be changed by properties of stimuli at least under some conditions, suggesting that IAT effects are not driven solely by the association of concepts, but also by the stimuli such concepts are represented by.

**The present studies**

Our studies try to investigate how individuals may hold multiple sets of associations about a target social category (Gypsy people) and how the presence of particular cues is sufficient to influence which subset of associative knowledge is activated. More precisely, we proposed examining how manipulating the attribute stimuli (pleasant vs. unpleasant) might influence the evaluations of different social groups in implicitly measured responses (using the IAT). In order to activate a positive stereotype of Gypsy people, an IAT was run where Gypsy and Non-Gypsy surnames were used as target categories, and Flamenco (as pleasant) and unpleasant sounds as attributes. Given that Flamenco music is associated with Gypsies, the association between this specific pleasant stimulus (Flamenco music and Gypsy people would be stereotypically congruent), but evaluatively incongruent. Similarly to Steffens and Plewe (2001), in the present research, the stimuli involved in the evaluative dimension show cross-category associations (Flamenco music—a pleasant stimulus—is incongruent in a evaluative basis with the Gypsy category—a discriminated group—but at the same time Flamenco music is stereotypically associated with Gypsies, and in this sense would be congruent). We expected that the stereotypic association of the pleasant attribute with the target group previously associated with it (Flamenco music/Gypsy people) would reduce the IAT effect compared to the condition in which the pre-existing association between the target category and the pleasant attribute is lower (i.e. Gypsy people and classical music). Flamenco leads us to face an apparently contradictory situation: a group that is certainly a target of prejudice is associated with a kind of music that
gives Spaniards a very positive social identity and is highly valued abroad. In this research we expect that activating the already existent link between Flamenco music and Gypsies will result in a decrease of the negative attitude typically shown by participants toward Gypsies; we do not expect these effects to be shown when other kinds of positively evaluated music (e.g. classical music) are associated with Gypsies or when Flamenco music is associated with other discriminated groups (e.g. the North African community). Two studies were carried out to test these hypotheses. The first was conducted to show the different effects of exposure to music (Flamenco and classical) in the implicit activation of negative attitudes toward Gypsy people. In the second, Flamenco and classical music were also used to explore their impact on the negative attitudes toward the North African community, a different minority group in Spain which is also discriminated against.

**Study 1**

The goal of the first study was to test the usefulness of activating the link between a traditionally prejudiced group (Gypsies) and a positive aspect of its stereotype (Flamenco music) in reducing the negative implicit pattern of association toward the group using the IAT measure. In this first study, the results of activating this link (Flamenco music—Gypsy group) were compared to the effects of another kind of positive valued music (classical music) to test its consequences on the measure of implicit attitude.

In order to conduct this study, three different IAT measures were taken from participants. In the first one, prejudice toward Gypsy people was tested using a classical IAT attitude measure with Gypsy and non-Gypsy social categories and pleasant and unpleasant words as the evaluative dimensions. In the two following IAT measures, the classical attribute categories pleasant/unpleasant were replaced by pleasant and unpleasant sounds as the evaluative dimensions.

In one of the IAT procedures (hereafter Flamenco music IAT), pleasant sounds consisted of Flamenco music clips, whereas in the other IAT measure (classical music IAT) the pleasant stimuli involved classical music clips. In both IAT procedures, unpleasant sounds were noises such as a car crash or a bee buzzing taken from a standardized sound database (IADS, Bradley & Lang, 1999).

Our main hypothesis was that participants would show an implicit negative attitude toward the Gypsy community in terms of the IAT effect index, with standard measures. However, a low prejudice effect was expected when Flamenco music clips were used as pleasant stimuli. In other words, we expected participants to show a low IAT effect with Flamenco music IAT compared to classical music IAT.

**Method**

**Participants**

Participants were 102² first-year undergraduate psychology students (78 females). The sex of participants did not show any effect or interaction in the results reported below and therefore was disregarded for further analyses. The average age of participants was 18 years ($M=18.7$; $SD=1.95$). None of them reported to be Gypsies.

**Materials**

For the three IATs run, the six Gypsy surnames (e.g. Heredia) and six non-Gypsy surnames (e.g. López; for the full list, see Table 1) were selected from a pilot study used in a previous experiment (Moya, Ruiz, Rodríguez-Bailón, & Expósito, 2006). As pleasant words, we used those of the standard attitude IAT measure (http://faculty.washington.edu/agg/iat_materials.htm) following the standards reported by Bellezza, Greenwald, and Banaji (1986, see also Table 1 for the list of pleasant and unpleasant words used).

Two new sets of six stimuli were developed for this study: 5-second Flamenco and classical music clips, which were selected on the basis of a pretest assessment. For this purpose, 22 participants listened to 5-second clips of different pieces of Flamenco music (e.g. ‘alegrías’) or classical music (e.g. a Beethoven’s sonata). The results of this pre-test showed that participants do not perceive differences between Flamenco and classical music stimuli regarding its pleasantness ($t(1, 10) = -0.38, p = 0.72$, ns, $M = 5.63$ and $M = 5.59$, respectively for Flamenco and classical music.
The impact of flamenco music clips, on a scale of seven points). The six unpleasant sounds (e.g., a car crash, a bee buzzing, etc.) were selected from the IADS (Bradley & Lang, 1999), using the normative scores adapted to the Spanish population by Fernández-Abascal et al. (2008).

All pretest participants were able to categorize the audio stimuli within 5 seconds, and most of them did it much faster. However, as in the IAT typical procedure, the IATs used in the present research included stimuli long enough for participants to give an answer before the stimulus was over.

**Procedure and measures**

Upon their arrival in the laboratory, participants were informed that they would take part in two studies that included tasks often used in social psychological research on cognitive processes involved in social perception. In both sessions, participants were placed in individual cubicles (a maximum of eight) in the laboratory and seated in front of a computer using Windows XP with an IAT procedure built using E-prime software (Schneider, Eschman, & Zuccolotto, 2002). Participants were encouraged to respond as quickly as possible without making errors.

**Session 1** The first study was completed by all participants early in the academic year. In Session 1, we tested the baseline prejudice of participants toward Gypsy people with an ethnic bias standard IAT measure that used the seven-block procedure proposed by Nosek, Greenwald, and Banaji (2007, see Table 1). This procedure was used to assess implicit attitudes toward Gypsy vs. non-Gypsy people. In this standard IAT measure, participants responded to a series of items that were classified into four categories—concept discrimination (Gypsy and non-Gypsy) and two attributes: pleasant vs. unpleasant valence words (e.g., peace and vomit respectively). Participants were asked to respond rapidly to items representing one concept and one attribute by pressing a key (e.g., Gypsy people and pleasant), and by pressing a different key to items from the remaining category and attribute (e.g., non-Gypsy and unpleasant). Participants then performed a second task in which the key assignments for one of the pairs were switched (such that non-Gypsy pleasant or Gypsy unpleasant; on the contrary, the incompatible block was the one in which participants were asked to associate Gypsy pleasant, or non-Gypsy unpleasant). The IAT produces measures derived from latencies of responses to these two tasks. In the current study, the so-called compatible block of trials was the one that mapped the same answer to non-Gypsy pleasant, or Gypsy unpleasant; on the contrary, the incompatible block was the one in which participants were asked to associate Gypsy pleasant, or non-Gypsy unpleasant. Each critical block of compatible and incompatible associations consisted of 72 trials, and the order of compatible and incompatible critical trials was counterbalanced across participants. The most

<table>
<thead>
<tr>
<th>Gypsy</th>
<th>Non-Gypsy</th>
<th>North African</th>
<th>Spanish</th>
<th>Valence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heredia G.</td>
<td>Garcia</td>
<td>Mohamed</td>
<td>Juan</td>
<td>Suerte (Lucky)</td>
</tr>
<tr>
<td>Cortés L.</td>
<td>López</td>
<td>Rachid</td>
<td>Manuel</td>
<td>Amor (Love)</td>
</tr>
<tr>
<td>Carmona M.</td>
<td>Martínez</td>
<td>Hassan</td>
<td>Pedro</td>
<td>Paz (Peace)</td>
</tr>
<tr>
<td>Flores G.</td>
<td>González</td>
<td>Soraia</td>
<td>Ana</td>
<td>Cielo (Heaven)</td>
</tr>
<tr>
<td>Montoya P.</td>
<td>Pérez</td>
<td>Yasmina</td>
<td>Pilar</td>
<td>Aplauso (Cheer)</td>
</tr>
<tr>
<td>Amaya S.</td>
<td>Sánchez</td>
<td>Latifa</td>
<td>Carmen</td>
<td>Feliz (Happy)</td>
</tr>
</tbody>
</table>

*Note:* Items shown represent those used for the Gypsy vs. non-Gypsy and North African vs. Spanish complementary categories for the baseline measured and experimental conditions in Studies 1 and 2. Valence stimuli (pleasant vs. unpleasant) represent the words used in Studies 1 and 2 (with their English translation in brackets) for the baseline measured in Session 1. Note that the valence stimuli for the IATs in Session 2 for both Flamenco and classical music IATs in Studies 1 and 2 were pleasant (5 seconds of music clips) and unpleasant (annoying noises) sounds.
important measure in the IAT task is the difference between reaction times for incompatible and compatible blocks of trials. Response latency differences provided the measure of implicit group evaluation. The IAT effect was computed so that high scores showed more implicit prejudice toward Gypsies. For each of the 144 test trials, participants’ responses were followed by a 250 ms delay before the next stimulus was presented. Errant trials were not corrected by participants. This method uses an error penalty recommended by Greenwald, Nosek, & Banaji (2003), where errant responses were replaced with their respective block mean for correct answers + a 600 millisecond error penalty.

The IAT has been shown to display good reliability and good convergent and discriminant validity (Greenwald et al., 1998, 2003) as well as some predictive validity. This first IAT standard procedure using Gypsy and non-Gypsy surnames in association with pleasant and unpleasant words was taken as a baseline in order to measure the initial prejudice of participants toward Gypsy people. Four weeks after completing this baseline measure, participants were asked to complete two IATs (the Flamenco and classical music IATs).

Session 2  Upon their arrival in the same laboratory used in Session 1, participants completed tasks for two IAT measures in succession. These two IAT measures were similar to the one in Session 1, with the only difference that music clips or sounds were used instead of words as pleasant and unpleasant stimuli respectively. For the Flamenco music IAT, the pleasant stimuli were Flamenco music clips; for the classical music IAT, the positively evaluated stimuli were classical music clips (classical music IAT). In both cases, the unpleasant stimuli included the same six annoying noises selected from the IADS (Bradley & Lang, 1999).

Participants performed this series of two IATs (counterbalanced across participants); as in Session 1, participants were instructed to categorize surnames of Gypsy and non-Gypsy people, and pleasant (Flamenco or classical music clips depending on the IAT) and unpleasant sounds (annoying sounds).

In one set of critical trials—the incompatible block—participants were asked to use the same key for Gypsy surnames and pleasant sounds (Flamenco music clips for the Flamenco music IAT or classical music clips for the classical music IAT), and the other key for non-Gypsy surnames and unpleasant sounds as soon as possible without making errors. In the other set of critical trials—the compatible block—participants were asked to use the same key for non-Gypsy surnames and unpleasant sounds, and the other key for non-Gypsy surnames and positive sounds (Flamenco or classical music clips, depending on the IAT measure) as soon as possible without making errors.

Response latencies in the trials where music or sounds were involved were recorded from the onset of the audio stimuli. Audio stimuli were displayed until participants responded (up the maximum of 5 seconds). As in the previous IAT measure, for each of the 144 test trials, participants’ responses were followed by a 250 ms delay before the next stimulus was presented.

As in Session 1, Session 2 included 72 trials for each critical block of compatible and incompatible associations in both IAT measures, and the order of the compatible and incompatible critical blocks was counterbalanced across participants.

Upon completion of the study, participants were asked in a debriefing session about their perceptions related to the purpose of the study and the hypotheses of the experimenter. Their answers confirmed our expectation that none of the participants were aware of the predicted effects of the two IATs conducted in Session 2 on implicit attitudes toward Gypsies. At the end of this session, participants were finally informed about the actual goals, hypotheses, and main results of the study.

Results

The two IAT critical measures obtained for each participant were analysed in a single factor design. Therefore, the main independent variable was IAT Type, that is, the type of music
clip used as pleasant stimulus in each IAT measure (Flamenco vs. classical music).

The new scoring algorithm proposed by Greenwald et al. (2003) was used to compute the three IAT scores. Standard deviations within conditions were applied to calculate the D scores for each of the three IAT measures that were administered (one in Session 1—the standard IAT attitude measure with Gypsy/non-Gypsy and pleasant/unpleasant words—and two in the second one—the Flamenco and classical music IAT measures). Higher D scores reflect more implicit negative attitude by showing faster responses when associating Gypsy surnames with unpleasant stimuli (words or sounds) and non-Gypsy surnames with pleasant stimuli (words or sounds).

As expected, the results of Session 1 showed that, at the beginning of the study, most participants had an implicit prejudice toward Gypsy people, as indexed by the D IAT algorithm differing significantly from 0 (Mean of D = 0.365; t(91) = 11.76; p < .001).

Based on the results of Session 1, participants were assigned to one of the two orders of IAT measures (Flamenco IAT first—classical music IAT afterwards vs. classical music IAT first—Flamenco music IAT afterwards) to control this procedural variable; this was done so that participants in the two counterbalanced orders did not differ in the implicit prejudice measure toward Gypsy people (D = 0.37 and D = 0.36 respectively for Flamenco–classical music and classical–Flamenco music; t < 1).

We explored the effect of using Flamenco vs. classical music clips as pleasant stimuli in the IAT procedure, as an index of the association of Gypsy and non-Gypsy surnames with pleasant and unpleasant stimuli. To do so, a repeated measure ANOVA was performed on the IAT D scores with IAT Type (Flamenco vs. classical music IAT) as the only within-participant factor. Although in both conditions participants seemed to be able to categorize the audio stimuli promptly (see Table 2), as depicted in Figure 1 a significant effect of IAT Type was found, F(1, 94) = 18.98;

Table 2. Mean response latencies for the critical blocks for the Flamenco and classical music IATs where implicit ethnic attitudes toward Gypsy people were measured

<table>
<thead>
<tr>
<th>Blocks</th>
<th>Congruent</th>
<th>Incongruent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flamenco music IAT</td>
<td>863.11</td>
<td>856.72</td>
</tr>
<tr>
<td>Classical music IAT</td>
<td>846.49</td>
<td>889.15</td>
</tr>
</tbody>
</table>

Figure 1. Implicit ethnic attitudes towards Gypsy people as a function of positive stimuli used (classical music clips–classical music IAT and Flamenco music clips–Flamenco music IAT).
As we predicted, participants showed lower implicit prejudice toward Gypsies when the pleasant stimuli were Flamenco music clips ($D = -0.01$) than when they were classical music clips ($D = 0.13$). In other words, when we used classical music clips as positively evaluated stimuli, participants still showed an implicit negative attitude toward Gypsies (in this case the mean D IAT algorithm differed significantly from 0, $t(99) = 4.08; p < .001$). This was not the case when Flamenco music clips were used ($t < 1$).

**Discussion**

The results of Study 1 show that music clips may play an important role in implicit attitudes toward Gypsy people. Specifically, when a stereotype-consistent but positive feature of Gypsies (such as Flamenco music) is used as a positively valued attribute in an implicit attitude measure, the typical effect showed by implicit prejudice measures toward Gypsies is lower.

These findings are noteworthy for several reasons. Previous research on prejudice reduction has mainly focused on showing the effects of associated discriminated groups with counter-stereotypical positive traits (e.g. Blair, Ma, & Lenton, 2001). However, the present study showed that it may be more useful to activate stereotypic positive traits to change the pattern of implicit negative attitude toward a prejudiced group. Given the theoretical importance of implicit attitudes (Bargh, 1997; Greenwald et al., 2002) and their ability to predict subtle forms of intergroup behaviour (Kawakami, Dovidio, & Van Kamp, 2005), the implications of these findings for ethnic intergroup relations are both practically and theoretically significant.

Nevertheless, although we propose that the beneficial effects of Flamenco music are due to its pre-existing association with Gypsy people, because it allows changing the pattern of activation of this association, an alternative explanation of these results could be put forward. The positive effect of Flamenco music might be due to Flamenco music *per se* (different and perhaps more positive than other kinds of music such as classical music). This alternative explanation is not supported by our previous finding, which shows that Flamenco and classical music were positively evaluated in a similar way. However, we would like to ascertain that it is the Flamenco–Gypsy association that is the one responsible for the effect found, and not some factor just related to this kind of music.

**Study 2**

Consequently, and in order to rule out the explanation mentioned above, a second study was conducted. In Study 2, Flamenco music and classical music were used to measure the implicit prejudice toward a different minority group in Spain, the North African community. This community is a highly discriminated group of Spanish society as shown by different sociological studies (e.g. Díez Nicolás, 2005), which have sometimes reported that this group is as discriminated against as Gypsy people. The prediction for this second study was that both Flamenco and classical music IATs will show participants’ negative implicit attitudes toward the North African group. This result should be shown by an IAT effect higher than 0, both for Flamenco and classical music IATs when the social categories considered are North African versus Spanish.

**Method**

**Participants**

Seventy-four different undergraduate students from the University of Granada participated in the study for course credits; 64 of them were women. As in Study 1, the sex of participants did not show any effect or interaction in the results reported below. Therefore, this factor was disregarded for further analyses. Participant mean age was 19.1 years ($SD = 1.76$).

**Procedure**

The procedure was identical to the one used in Study 1, with the only difference that the Gypsy/non-Gypsy discrimination categories were replaced by the North African/Spanish ones. For Study 2, two sets of six names were used as exemplars of the social categories North African and Spanish (see Table 1) generated...
by the authors and judged by them to be both familiar and unambiguously classifiable as Spanish or North African by members of the participants’ population.

Study 2 also involved two sessions: the first one was aimed at obtaining a baseline of the implicit prejudice toward North Africans. In Session 2, two IAT measures were also compared; one used Flamenco music clips as pleasant stimuli along with the same unpleasant sounds used in Study 1 (Flamenco music IAT), whereas the other one used classical music clips as pleasant stimuli (classical music IAT).

Results

As in Study 1, data from Session 1 were taken in order to test the assumption that participants showed prejudice toward North Africans and also to control the baseline prejudice toward North Africans for the two groups of participants who received the two orders of IAT Type used in Session 2 (Flamenco IAT first vs. classical music IAT first). As happened with the Gypsy group in Study 1, participants in Study 2 showed prejudice toward the North African community, as indexed by the D IAT algorithm differing significantly from 0 (Mean of \( D = 0.39 \); \( t(67) = 13.24 ; p < .001 \)).

Participants in the two orders did not differ in the implicit prejudice measure toward North Africans (\( D = 0.44 \) and \( D = 0.34 \) respectively for Flamenco–classical and classical–Flamenco orders; \( t(66) = 1.71 ; \text{ns} \). As was the case in the previous study, in this one, participants were able to categorize the audio stimulus quickly, as shown by the mean response times in the critical blocks of the three IATs involved in the present Study (as depicted in Table 3).

As in Study 1, an IAT Type (Flamenco vs. classical) repeated measures ANOVA was performed on the IAT D scores in order to study the effect of using Flamenco vs. classical music clips as pleasant stimuli in the ordinary attitude IAT, as an index of the association between North African and Spanish names with pleasant and unpleasant stimuli. As depicted in Figure 2, no effect was found to be significant in this analysis (\( D = 0.23 \)).

Table 3. Mean response latencies for the critical blocks for the Flamenco and classical music IATs where implicit ethnic attitudes toward North African people were measured

<table>
<thead>
<tr>
<th>Blocks</th>
<th>Congruent</th>
<th>Incongruent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flamenco music IAT</td>
<td>823.79</td>
<td>909.93</td>
</tr>
<tr>
<td>Classical music IAT</td>
<td>803.58</td>
<td>893.21</td>
</tr>
</tbody>
</table>

Figure 2. Implicit ethnic attitudes toward North African people as a function of positive stimuli used (classical music clips–classical music IAT, and Flamenco music clips–Flamenco music IAT).
and $D = 0.26$ respectively for Flamenco and classical music IAT measures, $t < 1$). According to our hypothesis, and in contrast with Study 1, the effect was significantly different from zero in both cases, $t(68) = 6.51; p < .001$, and $t(65) = 6.83; p < .001$, respectively for Flamenco and classical music IAT. Consequently, and in line with our predictions, when the categories to be discriminated were North African vs. Spanish names, the effects of using Flamenco vs. classical music clips as pleasant stimuli seemed to be irrelevant, and participants keep their negative implicit attitudes toward North African, both for Flamenco and classical IATs.

**Conclusion**

An important goal of this work was to explore how individuals may have several sets of associations with a target (Gypsy people, in these studies) and how the presence of particular cues is sufficient to influence which subset of associative knowledge is activated. We found support for the idea that the implicit attitude toward Gypsy people varied depending on the frame on which they were built. We used the IAT paradigm in the two studies presented in this article (Greenwald et al., 1998).

Summarizing our results, in Study 1, participants showed lower negative evaluation of Gypsies when they were asked to associate pleasant attributes such as Flamenco music clips with the social category of Gypsy people; this was compared to the task in which they had to associate another pleasant attribute (classical music clips) with Gypsies. However, these differences between ease of association depending on the music used (Flamenco vs. classical music) disappeared in Study 2, which involved North Africans.

Next, a mixed ANOVA was run with Study (1 vs. 2) as the between-participant factor, and IAT Type (Flamenco vs. Classical music) as the within-participant factor on the D scores. We are aware of the problems of this analysis because participants were not randomly assigned to the two studies, but we ran it just as an exploratory one in order to delve more into the data. The predicted interaction was found to be significant, $F(1,157) = 6.22; p = .014; \mu^2 = .38$; that is, for North Africans using either Flamenco or classical music clips as positively evaluated attributes did not make any difference (in both cases an IAT effect appeared); however, for the Gypsy group, implicit prejudice was reduced when using Flamenco music clips as positively evaluated stimuli and was not with classical music clips.

The results shown in the first study revealed the usefulness of manipulations leading to activating the automatic positive side of the stereotypes of prejudiced groups. In this specific case, it is the use of a type of music that is highly associated with a group and positively evaluated that may lead participants to change the negative evaluation of a previously negatively evaluated group. Therefore, these results suggest the beneficial effects of music in the intergroup arena.

An explanation of our results may account for the suggestion that individuals are able to avoid the negative evaluation of Gypsies as a result of an alteration of the context within which the target category is embedded. As has been shown in literature (Macrae, Bodenhausen, & Milne, 1995; Wittenbrink et al., 2001), participants may have evaluated Gypsy people in a certain way in one context (e.g. negatively when they are displayed with classical music), and in a different way in another context (e.g. more positively when they are presented with Flamenco music). In the present case, the context could be defined mainly by the music and sounds displayed (Flamenco and classical music or unpleasant sounds) which are contingent to the social category (Gypsy and North African people). If the display of Flamenco music in our study played the same role as the physical context in the studies of Wittenbrink et al. (2001) (e.g. the church), it would be interesting to test this proposition in greater detail. Future research should analyse whether simple exposure to Flamenco music leads people to assess the Gypsy group less negatively than usually.

Thus, our work can be interpreted in terms of differences in pattern activation, an important aspect of associative processes in the APE model (Gawronski and Bodenhausen, 2006). From this constructivist perspective, different contexts...
make different emotions or knowledge accessible, resulting in changes in people’s evaluations. In the present case, one could argue that the associative representation of Gypsy people is ambivalent, such that Gypsy people are associated with both positive and negative features (e.g. lazy and music talented). This ambivalent view of groups is not new in psychological literature; social psychologists have long identified attitudes entailing simultaneous positive and negative evaluations of an object (Fabrigar, MacDonald, & Wegener, 2005). In line with that, and according to the Iterative Reprocessing Model (Cunningham, Zelazo, Packer, & Van Bavel, 2007), a connectionist framework is ‘a pattern of weights that contains both positive and negative information which allows for the possibility of ambivalence and can be considered an ambivalent attitude’ (p. 754).

To sum up, as has already been said, the two crucial features which could make music and other kinds of features useful to improve outgroup attitudes are the following: (1) they should be positive; and (2) they should be highly pre-associated with the outgroup evaluated. Different future avenues could also explore to what extent it is possible to generalize the beneficial effects of music with different groups and music (e.g. Black people and gospel or jazz music).

Using a very similar argument as the ones cited above, we consider that the beneficial effects of Flamenco music cannot be explained by the repeated exposure of participants to Flamenco music (i.e. mere exposure effect; Zajonc, 1968). According to the mere exposure effect, repeated exposure to positive stimuli produces an increased positive response to these stimuli. This explanation was not supported by the data obtained with the present studies. Our results showed higher implicit negative attitudes toward Gypsies when participants were asked to complete the classical music IAT compared to the Flamenco music IAT, even though pre-test participants evaluated both kinds of music (classical and Flamenco) as equally positive.

Limitations and future research
Despite the interest of this research and the new procedure employed (as far as we know, it is the first time a cross-modal—auditory and visual—IAT has been developed), there are some caveats and limitations. The first one concerns the use of the IAT as the only measure of implicit attitudes. Further research should show whether the association between Flamenco music and Gypsies also influences less prejudiced responses more implicitly (e.g. using priming procedures) or explicitly (e.g. with behavioural, social distance measures, etc., as dependent measures). Another important question is related to the psychological process underlying the results obtained. The explanation given in this article is that the association between Gypsies and positive attributes—traditionally associated with them and included in their stereotype—reduces the negative implicit attitude toward this group. However, there is an alternative explanation that is not considered in these studies. It has to do with the fact that exposing participants to Flamenco music also activates a supra-ordinate identity in them as Spaniards and gives salience to a positive attribute associated with their own identity: culture related to Flamenco music. If the effect we found was explained by the activation of the perceivers’ social identity, our findings should only appear in individuals for whom Flamenco is an important part of their identity. On the contrary, if the main process underlying our results was the activation of the positive side of the Gypsies’ stereotype, the results would be found with similar intensity for people for whom Flamenco is important to define themselves and for people for whom it is not.

It is worth noting two major implications of the results shown in this article. The first is the use of beneficial effects of activating the positive side of stereotypes to reduce negative attitudes toward discriminated groups. The second implies the consideration of music as a useful tool to improve intergroup relations. Music defines societies and groups and is often associated with an expression of religious and national feelings. In some societies you can find out a lot about people if you listen to what they sing or know what kind of music they like. Tekman and Hortacşu (2002b), for instance, found that strengthening identity and sense of community was one of the perceived functions of music. Tarrant et al. (2001) adopted the social identity theory approach and
showed that the preference for different musical styles can be associated with other personal and social attributes and, thus, also constitutes social identities.

Besides providing further conceptual insight into the functions of music and its effects on improving intergroup attitudes and evidence concerning how implicit responses can be altered, this study suggests new ways to combat negative unconscious attitudes and to promote positive intergroup ones.

Notes
1. In March 2004, several bombs placed in trains that connected Madrid to its surroundings exploded in one hour, killing almost two hundred people and injuring thousands. The terrorist attacks, first of all attributed by the Spanish government to ETA (a Spanish terrorist group), were finally attributed to Arab-Muslim extremists. Some of the perpetrators were tried and sentenced.

2. The number of data on participants used in the analyses slightly varied because some participants missed Session 2 of the study, and also because there were technical problems with the computers used to run the study.

Acknowledgements
This research was supported by Grants Ref. Nos SEJ-2007–54362/PSIC and SEJ2007–65816/PSIC from the Spanish Ministry of Education and Science (Ministerio de Educación y Ciencia). We are grateful to Juan Lupiáñez who discussed this research with us and helped us both to generate some of the ideas included in the present article and to improve the text. We are also grateful to two anonymous reviewers and the guest editors for their helpful comments on an earlier draft of this article.

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Paper received 13 May 2008; revised version accepted 3 December 2008.

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