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What's in an accent? General spontaneous biases against nonnative accents: An investigation with conceptual and auditory IATs

Abstract: Nonnative accents are prevalent in our globalized world and constitute highly salient cues in social perception. Whereas previous literature has commonly assumed that they cue specific social group stereotypes, we propose that non-native accents generally trigger spontaneous negatively biased associations (due to a general nonnative accent category and perceptual influences). Accordingly, Study 1 demonstrates negative biases with conceptual IATs, targeting the general concepts of accent versus native speech, on the dimensions affect, trust, and competence, but not on sociability. Study 2 attests to negative, largely enhanced biases on all dimensions with auditory IATs comprising matched native–nonnative speaker pairs for four accent types. Biases emerged irrespective of the accent types that differed in attractiveness, recognizability of origin, and origin-linked national associations. Study 3 replicates general IAT biases with an affect IAT and a conventional evaluative IAT. These findings corroborate our hypotheses and assist in understanding general negativity toward nonnative accents.

Keywords: nonnative accents - social categorization - stereotypes - affect - implicit association test (IAT)

Given that there appears to be a constant unintentional scanning and affective labeling of the environment, the people one encounters do not even have to behave in any particular way to be evaluated: They just have to speak. [...] they do not even have to be understood much by the listener, as the uttered speech is still reliably evaluated and labeled on the basis of surface phonetics.

(Garcia & Bargh, 2003, p. 431)

In our globalized societies, a particular surface feature of spoken language—having a nonnative accent—is a subtle but highly salient cue in everyday interactions, at the workplace, or in the media. But what is cued by diverse nonnative accents that may drive our impression formation? Would you be drawn to the beauty of an attractive French accent, but react rather negatively when overhearing a Russian accent? Or do perceptions of nonnativeness color reactions more generally? French accents are commonly deemed more positive than Russian accents, which concurs with attitudes toward the nationalities (Eichinger et al., 2009; Rakić & Steffens, 2013). Even though such social group associations appear to be important, we propose that certain basic associations are *generally* triggered upon perceiving nonnative accents—despite divergent accent attractiveness and associated national stereotypes. Such automatically triggered biases would assist in understanding the prevalent negativity toward nonnative accents (e.g., in marketing, see Mai & Hoffmann, 2014; and discrimination against accented speakers: see Gluszek &

Dovidio, 2010; Fuertes, Gottdiener, Martin, Gilbert, & Giles, 2012). We propose these general associations based on the assumption of a *general nonnative accent category* and the influence of *foreignness and disfluency perceptions* accompanying nonnative accents, as we delineate further below.

Social Categorization and Specific Social Group Associations?

Although accents merely refer to one's manner of pronunciation (Giles, 1970), they are potent in capturing attention immediately. They may even outweigh other cues to social categorization, such as gender or visual cues of ethnicity (e.g., Kinzler, Shutts, DeJesus, & Spelke, 2009; Rakić, Steffens, & Mummendey, 2011). The primary attention to accents has been linked to their evolutionary precedence before visual dimensions, such as skin color, as group-differentiating cues (Kinzler, Shutts, & Correll, 2010; Pietraszewski & Schwartz, 2014a, 2014b). Given that accents are potent cues in person perception, it is puzzling how little we know about the categories and associations they cue.

This question has lingered since the early days of language attitude studies (Gluszek & Dovidio, 2010; Nesdale & Rooney, 1996; Ryan & Bulik, 1982). Social group associations have been the major focus of attention (see Dragojevic & Giles, 2016; Giles & Billings, 2004; Giles & Rakić, 2014; Lambert, Hodgson, Gardner,

& Fillenbaum, 1960). However, previous research has focused primarily on stigmatized varieties, which implied negative reactions (see Fuertes et al., 2012; Giles & Billings, 2004). For nonnative accents, different associations should be expected based on the accents' origins with their link to specific national stereotypes (e.g., Deprez-Sims & Morris, 2010; Hansen, 2013; Mai & Hoffmann, 2014). Yet it is still unclear whether listeners commonly detect specific social group backgrounds from nonnative accents and draw inferences accordingly (Gluszek & Dovidio, 2010). In fact, the detection of accent origins may oftentimes be ambiguous and require elaboration (Dovidio & Gluszek, 2012; Mai & Hoffmann, 2014). It has been argued that foreignness may take the place of specific associations if an accent's background cannot be determined (e.g., Gluszek & Dovidio, 2010; Lindemann, 2003). The foreignness of nonnative accents can indeed be perceived in a few milliseconds (Flege, 1984; Park, 2013), and the native–nonnative distinction appears to be basic (Akbik, Atagi, & Bent, 2013; Ryan, 1983).

In the present work, we assume that a *general nonnative accent category* is generally activated upon perceiving nonnative accents. Nonnative accents are commonly, and usually distinctly, accompanied by *foreignness* (see above) and *disfluency* perceptions (see Dovidio & Gluszek, 2012; Dragojevic & Giles, 2016; Munro & Derwing, 1995a, 1995b). These general perceptual effects of nonnative accents likely feed into the nonnative categorization. Moreover, they may trigger associations directly—and generally—for diverse nonnative accents (for an integrative review on categorization and perceptual experiences, see Johnson, Lick, & Carpinella, 2015; for the auditory domain, see e.g., Fasoli, Maass, Paladino, & Sulpizio, 2017).

General Associations with Nonnative Accents

Assuming foreignness and disfluency perceptions next to a general nonnative accent category as a fundamental basis in accent perception, we propose certain basic associations that should be linked to nonnative accents in general—irrespective of specific group associations.

Affect

Affective reactions are often the first responses elicited by a stimulus (Fiske, 1982; Zajonc, 1980; see also Giles & Marlow, 2011, for an integration into language attitudes models). The evolutionary importance of nonnative accents as cues to foreignness (see Kinzler et al., 2010; Pietraszewski & Schwartz, 2014a, 2014b; Reid et al., 2012) foresees fast affective preparedness reactions (Buss, 2008).¹ Subtle negative affect likely also arises from the disfluency of nonnative accents (Dovidio

& Gluszek, 2012; Dragojevic & Giles, 2016; Ryan, 1983). Such basic affective associations may be stored in the schema of nonnative accents (Cargile, Giles, Ryan, & Bradac, 1994; Fiske, 1982). Moreover, emotions such as frustration and anger were shown to accompany interactions with nonnative speakers due to perceived communication problems (Gluszek & Dovidio, 2010; Spencer-Rodgers & McGovern, 2002). Such experiences may also be learned and overgeneralized to the category of nonnative accent (Ryan, 1983).

Stereotypes and Beyond

We further propose that general stereotypes are linked to nonnative accents. Social perceptions center around the big two dimensions of competence and warmth (see Fiske, Cuddy, Glick, & Xu, 2002; Judd, James-Hawkins, Yzerbyt, & Kashima, 2005). For nonnative accents, most evidence attests to an *accent = low competence* association (see Fuertes et al., 2012; Gluszek & Dovidio, 2010). General low-competence associations likely stem from overgeneralized attributions of low language competence (Ryan, 1983). Expectations of nonnative speakers having less linguistic competence and being less comprehensible were found to bias perceptions, even of utterances that are grammatically correct and intelligible (Cheung, 2013; Gluszek & Dovidio, 2010; Rao, 1995; Rubin, 1992). Perceived disfluency may contribute to these general low competence associations (Dragojevic & Giles, 2016).

Evidence regarding warmth perceptions appears less conclusive. Higher warmth ratings compared to native standard speech are frequently expected, but may particularly apply to (regional) natively spoken varieties (Giles & Marlow, 2011; Giles & Rakić, 2014; Ryan, 1983; Yzerbyt, Provost, & Corneille, 2005). Nonnative accents, by contrast, are rather downgraded on warmth (see Fuertes et al., 2012). To understand warmth associations for nonnative accents, the differentiation of the global warmth dimension into morality (e.g., trustworthy, sincere) and sociability (e.g., kind, friendly; see Leach, Ellemers, & Barreto, 2007) appears fruitful. The core of morality, (dis)trust (Brambilla & Leach, 2014), should be triggered by nonnative accents' foreignness (Kinzler, Corriveau, & Harris, 2011). In addition, disfluency may contribute to distrust perceptions (Dovidio & Gluszek, 2012; Lev-Ari & Keysar, 2010). The resulting downgrading on trust may likely also manifest itself in a conceptual *nonnative accent–low trust* link. The second warmth component, sociability, appears less clearly linked to nonnative accents (see Ryan, Giles, & Sebastian, 1982). In general, sociability perceptions have been found to be more variable and context-dependent (Goodwin, Piazza, & Rozin, 2014; Landy, Piazza, & Goodwin, 2016). It could be assumed, though, that the perception of foreignness and disfluency may impinge on sociability perceptions for nonnative accents, likely mediated via affective reactions (see also Dragojevic & Giles, 2016).

¹This should particularly apply to nonnative accents, which frequently vary on more phonological dimensions compared to regional accents, and thereby signal a greater degree of foreignness (Bent, 2014; for corroborating evidence see Davis et al., 2014).

General Associations

In sum, we assume that nonnative accents generally trigger negative biases on the basic dimensions of affect, competence, and trust. These associations can be presumed to be well-learned and linked to a general nonnative accent category. Particularly for affect and trust, perceptions of accents' foreignness and disfluency may further contribute to general biases. Disfluency may also feed into low-competence associations. Sociability, by contrast, appears less clearly linked to nonnative accents, but foreignness and disfluency perceptions could impinge on this dimension as well.

The Present Research: General Spontaneous Reactions to Nonnative Accents

Whereas previous research has emphasized the role of social group associations with accents, we propose that negatively biased associations on the dimensions of affect, trust, and competence are basic, and should be triggered spontaneously for nonnative accents *in general*. The underlying assumption of a general nonnative accent category and the influence of foreignness and disfluency perceptions allowed for the following hypotheses: First, mere category priming of the concept 'nonnative accent' should suffice to trigger respective associations (see Lepore & Brown, 1997). Second, such general associations should also emerge in response to diverse nonnative accent speech samples, which presumably cue the perceptions of foreignness and disfluency in addition to the nonnative accent category.

Recent research with implicit association tests (IATs) lends initial support to these assumptions. Spontaneous biases against accents were revealed with conceptual IATs that relied on language category labels as targets (Lee, 2015; Redinger, 2010) as well as with auditory IATs that relied on short speech samples (Campbell-Kibler, 2012; Mitchell, 2009; Pantos & Perkins, 2013; Vande Kamp, 2002). However, the conceptual IATs focused on regional, natively spoken varieties and the employed target stimuli encompassed social-group designations (e.g., Welsh, Luxembourgerish). These might have directly cued national associations. For the auditory IATs, it is also unclear whether negative social group associations and low accent attractiveness have contributed to the spontaneous biases for the targeted accents (e.g., Asian,² Arabic). The genuine role of nonnative accents and the generality of biases thus remain ambiguous.

We aimed to avoid such confounds in the present research. First, we conducted conceptual IATs (Studies 1 and 3a) that presented participants with generic category labels (nonnative accent vs. native standard speech) and thereby avoided any references to

²Despite Asians being considered a model minority in the United States, they experience prejudice, and Asian accents are perceived as rather low in attractiveness (Bauman, 2013; Dovidio, Gluszek, John, Dittmann, & Lagunes, 2010; Giles & Niedzielski, 1998).

nonnative accent origins (such as ethnicity/nationality). Second, we complemented this abstract approach with auditory IATs (Studies 2 and 3b) that pitted accents differing in attractiveness, recognizability of origin, and associated national stereotypes against each other (French, Italian, Turkish, and Russian accents that were matched to the recordings of native speakers). To assess the proposed basic dimensions, we developed and employed IATs for affect, trust, and competence (Studies 1 and 2). We further employed a conventional evaluative IAT (the dimension will be referred to as *evaluation*) next to the affect IAT in Study 3 to replicate the present findings and establish comparability with previous studies.

Assuming general associations with nonnative accents, we expected negatively biased reactions (i.e., significant IAT effects) on the central dimensions of affect, trust, and competence, next to evaluation, in all studies and for all accent types within the auditory IATs. Accordingly, negative biases should also emerge for the present recognizable accents, French and Russian, which differed in attractiveness and associated national stereotypes. The specific French–Russian accent contrast will be inspected meta-analytically across studies in the end of the empirical part. Exploratorily, we also included the sociability dimension in Studies 1 and 2b to help understand its associations with nonnative accents.











Study 1: Conceptual IATs

The first experiment investigated general associations with the mere concept of nonnative accents. If associations with affect, trust, and competence are linked to a general nonnative accent category, priming the category should suffice to trigger these associations even in the absence of auditory cues of foreignness, disfluency, accent origin, and attractiveness (Lepore & Brown, 1997). To test this assumption, we relied on conceptual IATs, using only the concepts of nonnative accent versus native standard speech as targets. Next to the basic dimensions of affect, trust, and competence, for which we expected significant IAT effects, the sociability dimension was included exploratorily to shed light on previous inconsistent findings.

Method

IAT stimuli. The IAT classification tasks comprise stimuli for two target categories and for an attribute dimension, with the associations between them being of interest. The present conceptual target stimuli solely comprised the labels of the target categories because no adequate synonyms were available (see also Lee, 2015; Redinger, 2010; and Steffens, Kirschbaum, & Glados, 2008, for using concepts as stimuli). On the one hand, we used the designation of standard German HOCHDEUTSCH, initially explained as *accent-free German*, to reflect native German undiluted by regional varieties. This term also had the advantage of clearly

Table 1 Attribute labels and attribute stimuli in German, with translations in parentheses, for the IAT dimensions in Studies 1 and 2

Positive label	Positive Gefühle (positive feelings)	Vertrauen (trust)	Kompetent (competent)	Sozial (social)
Stimuli		aufrichtig (sincere)	intelligent (intelligent)	freundlich (friendly)
		glaubwürdig (credible)	kompetent (competent)	warm (warm)
		ehrlich (honest)	qualifiziert (skilled)	gutmütig (kind)
		rechtschaffen (righteous)	fähig (capable)	hilfsbereit (helpful)
		vertrauen (to trust)	klug (clever/bright)	sympathisch (likable)
Negative label	Negative Gefühle (negative feelings)	Misstrauen (distrust)	Inkompetent (incompetent)	Unsozial (unsocial)
Stimuli		verlogen (false/lying)	dumm (stupid)	abweisend (dismissive/cold)
		trügerisch (deceptive)	inkompetent (incompetent)	kühl (cold)
		unehrlich (dishonest)	ungebildet (uneducated)	hartherzig (hard-hearted)
		intrigant (deceitful)	unfähig (incapable)	egoistisch (egoistic)
		misstrauen (to distrust)	leichtfertig (frivolous/thoughtless)	unsympathisch (unlikable)

referring to language and not to the nationality (a potential confound encountered in previous conceptual IATs). On the other hand, we used the designation AKZENT (accent), initially explained as *German with a nonnative accent*. Even though the term “accent” usually refers to nonnative accents in German, it may be confused with regional varieties and dialects (see Schmid & Hopp, 2014; for the potential of influencing IAT target category constructions, see Nosek, Greenwald, & Banaji, 2007).

The four attribute dimensions (affect, trust, competence, and sociability) each comprised 10 stimuli, as presented in Table 1. To capture affective reactions that may be difficult to verbalize, we created an affect IAT with morphed faces (expressing positive vs. negative affect). The faces were carefully pretested to rule out possible confounds (perceptions of competence and national origin), and to assure that positive versus negative faces predominantly differed in the affect they conveyed. The stimulus words for the other attribute dimensions were also created and pretested to control for possible confounds (number of syllables and letters, word frequency, see Lane, Banaji, Nosek, & Greenwald, 2007; Nosek et al., 2007). The development and pretests of the attribute stimuli are described in Appendix A in the supplemental material online.

Design and participants.³ In the present experiment, we realized the IAT dimensions between participants. One hundred thirty participants completed the study; one had to be excluded due to misconceptions of the accent concept,⁴ resulting in $N = 129$ ($n_{\text{affect}} = 34$, $n_{\text{trust}} = 31$, $n_{\text{competence}} = 32$, $n_{\text{sociability}} = 32$) for the analyses (53.5% female, 45.7% male, 0.8% no gender indicated; $M_{\text{age}} = 21.76$ years, $SD_{\text{age}} = 4.91$; 85.3% native speakers of German⁵).

Procedure. The laboratory experiment on “language and perception” was conducted at a German university. It took about 15 minutes to complete, and

³Throughout our studies, we had aimed for at least 30 participants per condition. In Study 3, we raised this aim to 50 (for the overall effect of the two IAT types and their correlation).

⁴In the conceptual IATs, participants were excluded if they indicated having thought solely of dialects or of a diacritical mark.

⁵ $n = 15$ indicated that German was not their native language, and for $n = 4$ this information was missing. We retained these participants who did not indicate German as their native language in the analyses because they constitute a sizable proportion of the recipients, even in the present samples. Moreover, the presumed associations should also apply to them. However, excluding them does not change the pattern of results in the present studies substantially.

participants received a chocolate bar or study credits as compensation. Participants were seated at single work-places separated by partitioning walls and signed an informed consent form before starting the experiment using 15.6" laptop computers.⁶ They were randomly assigned to one of the eight IAT conditions: 4 (dimensions: affect, trust, competence, sociability) × 2 (block order: compatible vs. incompatible first); programmed with the software EPrime.

Participants read that they would complete a classification task to test their ability to concentrate. They were instructed to put their index fingers on the keys "E" and "I" in order to sort words (and pictures, for the affect IAT) into categories appearing in the upper left and upper right corner of the screen. Next, the target categories *accent* and *standard German* were explained (see IAT stimuli above). Participants were asked to accomplish the classifications as quickly as possible while avoiding errors to the best of their ability. In cases of a wrong response, a red cross was displayed below the stimulus until a correct answer was given. The IAT followed the standard seven-block procedure (Greenwald, Nosek, & Banaji, 2003). In the practice blocks, participants first classified the target words (i.e., accent vs. standard German; Block 1: 10 trials) followed by the attribute words/pictures (e.g., credible, deceptive, see Table 1; Block 2: 10 trials with each stimulus appearing once). In line with common practice, target words were presented before the target-practice trials and written attribute stimuli were presented before the attribute-practice trials. For the affect dimension, participants were informed that each category would be represented by five pictures of faces. The first combined block (Block 3) comprised 20 trials and the second (Block 4) comprised 40 trials (with target and attribute stimuli alternating). In the fifth block, the target categories switched positions and participants practiced this new assignment for 10 trials (this low number of trials was chosen because the target stimuli only comprised two words). Blocks 6 (20 trials) and 7 (40 trials) were combined blocks with the new assignment of target categories.

For *compatible* tasks in the combined blocks, the required key response was the same for the target *accent* and negative attribute stimuli, on the one hand—and for the target *standard German* and positive attribute stimuli, on the other hand. The reverse holds for the *incompatible* tasks. Depending on block order condition, participants either completed compatible tasks in Block 3 and 4 and incompatible tasks in Block 6 and 7, or vice versa (i.e., incompatible tasks first). After completing the IAT, participants were asked whether they had thought of one or several specific accent/s while completing the classification task, and if so, to name them.

Thereafter, participants completed two paper-pencil questionnaires at their desk, which we will not discuss

⁶The reimbursement was similar across studies and the setup was the same for all laboratory experiments.

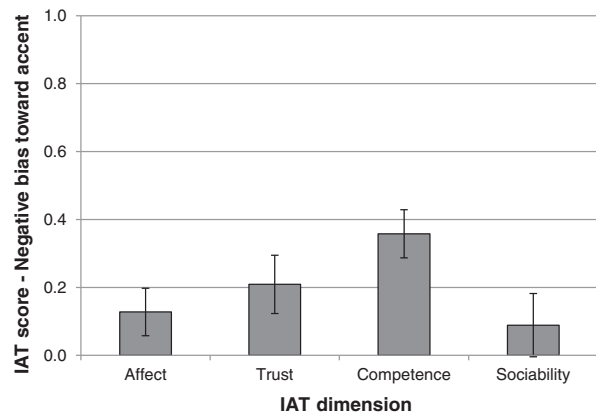


Fig. 1: Mean IAT scores per IAT dimension in Study 1. Higher values indicate a relatively negative bias toward the concept Akzent (accent, defined as German spoken with nonnative accents) versus Hochdeutsch (standard German, defined as accent-free German). Error bars indicate standard errors

further,⁷ and provided demographic information. After completion, participants were thanked, received their compensation, and were debriefed if desired.

Results

IAT effects. We computed the IAT scores (which indicate greater response difficulties—i.e., longer response times—in incompatible compared to compatible blocks) in the present and all following studies according to the scoring algorithm (D1) recommended by Greenwald, Nosek, and Banaji (2003). Accordingly, all data could be retained because no response latencies exceeded 10,000 ms and no one evidenced more than 10% fast responses (< 300 ms). In line with recommendations (Eisinga, te Grotenhuis, & Pelzer, 2013; Gawronski & De Houwer, 2014), IAT reliabilities were determined with the Spearman-Brown split-half coefficient in all studies. Reliability was satisfying with .77 overall (for affect .71, trust .76, competence .73, sociability .81).

Mean IAT scores are displayed in Figure 1; scores above zero indicate a bias against accent for all dimensions. Hence, the IAT values should be interpreted as *negative bias scores*. In line with the hypotheses, IAT biases emerged for affect, trust, and competence (tested with one-sample t-tests against zero). The average IAT score was largest on competence: $t(31) = 5.05$, $p < .001$, $d = 0.89$, followed by trust: $t(30) = 2.43$, $p = .02$, $d = 0.44$, and affect: $t(33) = 1.82$, $p = .08$, $d = 0.31$. For sociability, the average IAT score did not differ significantly from zero, $t(31) = 0.95$, $p = .35$, $d = 0.17$. To investigate differences between dimensions,

⁷The first questionnaire was a distractor task. The second assessed potential correlates of IAT scores with evaluations of nonnative-accented and native standard German. The IAT type influenced questionnaire responses despite the distractor task, which renders the interpretation of correlations between IAT scores and evaluations difficult. Due to the present low sample sizes per dimension ($n_s \leq 34$), and the reliability problems observed in Study 3a (which precluded investigating the robustness of dimension-specific correlations), these results will not be discussed.

we conducted an ANOVA with IAT dimension and block order as factors. The effect of dimension was significant, $F(3, 121) = 2.81, p = .04, \eta_p^2 = .07$. Post-hoc tests with Bonferroni correction indicated that the bias on competence was larger than on sociability ($p = .05$), with the other dimensions in between ($ps > .12$).

Additionally, the main effect of block order emerged significantly, $F(1, 121) = 33.41, p < .001, \eta_p^2 = .22$, next to a tendency for the Order \times Dimension interaction, $F(3, 121) = 2.38, p = .07, \eta_p^2 = .06$. Broken down, the effect of order was not significant for affect, $p = .33$; but for the other dimensions, IAT scores were larger in the *compatible first* order compared to the *incompatible first* order (trust: $M = 0.39 > M = 0.04, p = .02$, competence: $M = 0.63 > M = 0.08, p < .001$, sociability: $M = 0.39 > M = -0.21, p < .001$). Reduced IAT effects in the incompatible first order are commonly observed due to task-set switching (see Klauer & Mierke, 2005). The reversal of signs for the sociability dimension, however, indicates no clear associations (i.e., what is compatible vs. incompatible) in the first place.

Specific accent. In line with our intention of targeting a general nonnative accent category, most participants had not thought of specific accents while completing the IAT. Only 18 out of 128 participants (14%; 1 missing) indicated having thought about specific accents.⁸

Discussion

The present findings are in line with our hypotheses. First, negative biases emerged on the central IAT dimensions even though participants were only presented with the concepts of nonnative accent versus native standard speech (without specific origins or sounds made salient), and 86% of participants indicated not having thought of specific accents while completing the IAT. These findings corroborate the idea of general category-based associations. Second, IAT biases emerged for the basic dimensions of competence, trust, and affect (in decreasing order), whereas no systematic bias emerged for sociability. Instead, the direction of bias even reversed depending on IAT block order. This corroborates the idea that there is no clear conceptual link between nonnative versus native accents and sociability. Furthermore, these findings attest to the proposed importance of differentiating between sociability versus trust/morality.

⁸Pertinent to the next studies, the most frequently named accents were Turkish, French, and Russian, both regarding the IAT ($ns = 8, 3, 2$, respectively) and the language evaluation questionnaire, where participants had also indicated whether they had thought of specific accent/s while completing the questionnaire (of 62 responses: $ns = 32, 19, 20$, respectively; with a broader classification, 27 answers included Eastern European accents and 16 included Southern European accents). As most participants named several accents, the impact of those conceptions could not be investigated.

Although the conceptual IAT approach had the great advantage of investigating general category associations (devoid of specific cues to attractiveness and national origin), it did not allow for examining the influence of specific accents on spontaneous reactions. In principle, one could integrate specifications (such as “French accent” or “Russian accent”) in the target labels. However, this may inevitably cue national associations (for the fine line between category and stereotype priming, see Lepore & Brown, 1997; for the importance of category labels, see Lane et al., 2007) and thus not reflect spontaneous reactions to *accents* of diverse backgrounds. Therefore, we turned to auditory IATs in the next experiments. This shift in modality for the target stimuli further allowed for the influence of perceptual features—with the presumed major role of general foreignness and disfluency perceptions for nonnative accents—beyond mere category priming.

Study 2: Auditory IATs

The aim of Study 2 was to test reactions to diverse auditory exemplars of nonnative accented versus native speech with the accents varying in associated national stereotypes and attractiveness. An accent’s perceived beauty is usually correlated with the positivity toward the social group (see Rakić & Steffens, 2013; Schoel et al., 2013) and might function as a surface cue that moderates evaluations (see Garcia & Bargh, 2003). Accordingly, we focused on accents that were most frequently nominated as likable and dislikable accents in a representative survey in Germany (Eichinger et al., 2009): French, Italian, Turkish, and Russian—paralleling the most accessible accents named in Study 1. In the obtained auditory stimulus sets (see method section), the accent types can be classified as follows: (a) *French* = attractive, origin recognizable, positive national associations, (b) *Italian* = neither unattractive nor attractive, origin not recognizable, (c) *Turkish* = unattractive, origin not recognizable, (d) *Russian* = unattractive, origin recognizable, negative national associations.

Despite these different perceptions and associations, we predicted fast, spontaneous biases against *all* nonnative accents as compared with native speech. For the auditory cues, category-based associations linked to a general nonnative accent category and foreignness/disfluency-based associations should converge in creating these general biases. If social group associations played a role in this early stage, however, one would expect a significantly reduced, or even reversed, bias for French accent IATs (due to high attractiveness and positive national associations) and the strongest bias for Russian accent IATs (due to low attractiveness and negative national associations). Furthermore, if dimension-specific national group stereotypes played a role, the difference in IAT scores for French versus Russian might be stronger for the dimensions of affect and trust as compared with competence and sociability (where national associations appear to diverge less, see Appendix B in the supplemental material online). The

central dimensions of affect, trust, and competence were tested in Study 2a; the sociability dimension, which had yielded no consistent IAT bias in Study 1, was inspected in Study 2b.

Study 2a: Method

IAT stimuli. The attribute stimuli were the same as in Study 1. For the target categories, the same labels and descriptions were used. However, the stimuli consisted of short audio recordings. We employed the verbal guise method (different speakers for different speech varieties) to obtain naturally sounding speech samples (see Garrett, 2010). This approach required careful pretesting. The speakers were matched on several dimensions to avoid potential confounds (i.e., voice-based feelings and liking next to perceptions of competence, trust, and dynamism). Moreover, pretesting assured that the short audio recordings allowed for the recognizability of French and Russian accents, and that the accent types differed in perceived attractiveness. The pertaining national associations were also tested in student populations. We describe the development, matching, and pretesting of the audio stimuli and national associations in Appendix B in the supplemental material.

The final stimuli were matched recordings by 4 non-native accented and 4 native speakers (two male and two female speaker pairs) for each accent type (French, Italian, Turkish, Russian; i.e., in total, 16 matched speaker pairs). Each speaker provided two to three stimuli, resulting in 10 *nonnative accent* recordings and 10 matched *native* recordings per accent type.

Design and participants. Study 2a was realized as a mixed design to investigate IAT effects between the four accent types across three dimensions (within participants). If several IATs are conducted in a row, effects typically diminish for later IATs (see, e.g., Vande Kamp, 2002; Nosek et al., 2007). Therefore, we invited participants to the laboratory three times, each time assessing one IAT (affect, trust, and competence, in this order) with about a week in between.

We had aimed at 120 participants (30 per between condition). However, due to time constraints in the laboratory, we were able to assess only 93 participants for T1 (58.1% female, 41.9% male; $M_{\text{age}} = 22.75$ years, $SD_{\text{age}} = 3.03$; 83.9% native speakers of German) and 83 participants completed all three IATs⁹ (61.4% female, 38.6% male; $M_{\text{age}} = 22.76$ years, $SD_{\text{age}} = 3.08$; 88% native speakers of German).

Procedure. The laboratory experiment on “language and reaction ability” was conducted in three sessions of 5 to 10 minutes each. In the first session, participants signed an informed consent form and completed the affect IAT (conducted with EPrime). They

⁹Ns by accent type at T1: French- $n = 22$, Italian- $n = 25$, Russian- $n = 22$, Turkish- $n = 24$; completed all: French- $n = 18$, Italian- $n = 21$, Russian- $n = 20$, Turkish- $n = 24$.

were randomized to one of eight IAT conditions (4 accent types \times 2 block orders). The IAT procedure was similar to Study 1. To accommodate the auditory IAT format, participants were told that they would hear words via their headphones or view pictures on the screen. Then, the words of the recordings were presented (written) on the screen (in parallel to the presentation of attribute stimuli before the subsequent attribute practice trials). This procedure also served to avoid surprise effects and facilitate understanding in the following classification task. Participants were told that the words would be read out by different people and they were instructed to classify them based on the pronunciation as accent versus standard German. The first practice block (auditory targets) comprised 20 trials. Also in Block 5, the switched target assignments were practiced over 20 trials (instead of 10 as in Study 1) to present all auditory stimuli once. The remaining procedure was parallel to Study 1, with combined blocks comprising 20 and 40 trials (auditory target stimuli and visual attribute stimuli alternated).

Participants reported demographic information¹⁰ after IAT completion in the first session. In the second session, participants completed the trust IAT, and in the third session, the competence IAT (always for the same accent type and with the same block order).

Study 2a: Results

When computing the IAT scores, all participants could be retained because no one evidenced more than 10% fast responses (< 300 ms). Three responses with latencies $> 10,000$ ms were deleted. Reliabilities were .70 for affect (.68 for those who completed all IATs), .63 for trust, and .71 for competence.¹¹

In line with our hypothesis, all IAT effects—on the three IAT dimensions for all accent types—were significant, $t_s > 4.10$, $p_s \leq .001$, $d_s > 0.91$. To test for differences in IAT effects, we conducted a 3 (dimension: affect vs. trust vs. competence) \times 4 (accent type: French vs. Italian vs. Russian vs. Turkish) \times 2 (block order: incompatible first vs. compatible first) mixed ANOVA with the first factor as a within factor. Strikingly, the main effect of accent type was not significant, $F(3, 75) = 0.07$, $p = .98$, $\eta_p^2 = .003$ ($M_{\text{French}} = 0.53$, $SD = 0.21$; $M_{\text{Italian}} = 0.43$, $SD = 0.37$; $M_{\text{Russian}} = 0.56$, $SD = 0.37$; $M_{\text{Turkish}} = 0.50$, $SD = 0.31$), neither was the Accent type \times Dimension interaction, $F(5.41, 135.16)$ ¹² = 1.51, $p = .19$, $\eta_p^2 = .06$. Also a priori defined contrasts comparing French (−1) and Russian (1)—with Turkish and Italian set 0—did not reveal significant differences on any dimension: affect: $t(89) = 0.24$, $p = .81$, $r_{\text{Contrast}} = .03$;

¹⁰Including a question on frequency of contact with accented speakers, which did not yield significant correlations with the IAT dimensions ($r_s < .16$, $p_s > .15$).

¹¹The IAT dimensions correlated with each other, $r_s(81) = .48 / .40 / .61$, $p_s < .001$, for affect-trust, affect-competence, and trust-competence, respectively.

¹²The Greenhouse-Geisser correction for sphericity was implemented if deviations were indicated by Mauchly's test of sphericity.

trust: $t(80) = -0.82, p = .42, r_{\text{Contrast}} = .09$; competence: $t(79) = 0.98, p = .33, r_{\text{Contrast}} = .11$. For these tests by dimension, we relied on all available data (constraining the analyses to those who completed all IATs does not change the results). An alternative contrast, comparing French (-2) with Turkish (1) and Russian (1) also yielded no significant effects: for affect: $t(89) = 0.35, p = .72, r_{\text{Contrast}} = .04$; trust: $t(80) = -1.44, p = .16, r_{\text{Contrast}} = .16$; and competence $t(79) = 0.97, p = .34, r_{\text{Contrast}} = .11$.

However, the main effect of dimension was significant, $F(1.80, 135.16) = 4.21, p = .02, \eta_p^2 = .05$. The means are displayed in Figure 2. Post-hoc tests with Bonferroni correction revealed that the IAT effect on trust was significantly higher than the IAT effect on competence ($p = .003$), whereas both did not differ significantly from affect ($ps > .21$). Additionally, the main effect of block order was significant, $F(1, 75) = 6.90, p = .01, \eta_p^2 = .08$, qualified by an interaction with dimension, $F(1.80, 135.16) = 4.08, p = .02, \eta_p^2 = .05$. As commonly observed for auditory IAT variants, presumably due to practice effects (e.g., Eder, Rothermund, & De Houwer, 2013; Vande Kamp, 2002), IAT scores were higher in the *incompatible first* than *compatible first* order. The order effect was significant for the affect dimension ($M = 0.64 > M = 0.34, p = .001$), and trust ($M = 0.65 > M = 0.48, p = .04$), but not for competence ($p = .47$, overall $M = 0.45$). The latter may be attributable to training effects because all participants completed competence in the last session. No other interaction effects were significant, $F_s < 0.38, ps > .76, \eta_p^2_s < .02$.

Study 2a: Discussion

The present findings corroborate our hypothesis that nonnative accented versus native speech negatively biases spontaneous reactions on the basic dimensions of affect, trust, and competence irrespective of the accent type. In line with this presumed general nature of associations, all IAT effects were significant.

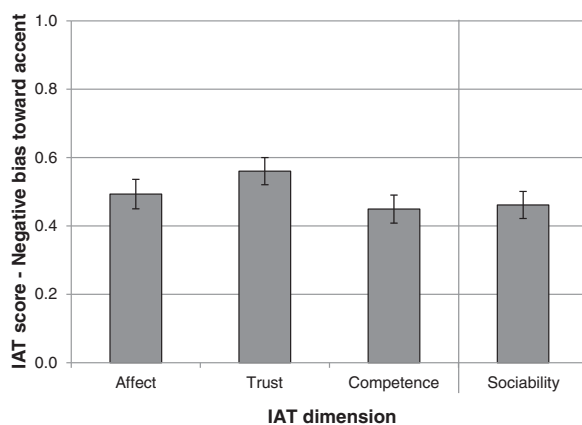


Fig. 2: Mean IAT scores per IAT dimension in Study 2a (affect, trust, competence) and 2b (sociability). Higher values indicate a relatively negative bias toward the target category Akzent (audio stimuli by nonnative accented speakers) versus Hochdeutsch (audio stimuli by native German speakers). Error bars indicate standard errors

Moreover, the size of these initial biases was not moderated by the accents realized in the present study, which differed in attractiveness, recognizability of origin, and associated national stereotypes. Intriguingly, IAT biases did not even differ for the recognizable accent types, French (attractive, positive national associations) and Russian (unattractive, negative national associations). To corroborate this finding, we conducted an online study with Inquisit Web with a different and larger sample¹³ ($N = 72$, female = 68.1%, male = 31.9%; $M_{\text{age}} = 23.43, SD_{\text{age}} = 2.57$; 94.5% native speakers). All participants completed the affect IAT and were randomized to the French versus Russian accent group. Again, IAT biases were not moderated by accent type: Its main effect, $F(1, 68) = 1.43, p = .24, \eta_p^2 = .02$ ($M_{\text{French}} = 0.54, SD = 0.48$; $M_{\text{Russian}} = 0.45, SD = 0.40$), and interaction with order $F(1, 68) = 0.16, p = .69, \eta_p^2 = .002$, were nonsignificant. Even though this study was conducted online, the average IAT effect ($M = 0.49, SD = 0.44$) was almost the same as the average affect IAT score in the laboratory experiment, attesting to the robustness of the present findings.

The bias on competence was strongest in Study 1 (conceptual IATs) and of similar size in the auditory IAT in Study 2a. By contrast, the IAT effects for affect and trust more than doubled (see Figures 1 and 2) given auditory cues. We presume the influence of foreignness and disfluency perceptions play a major role in these differences.

Study 2b: Method

Study 2b investigated auditory IAT effects for sociability. Sociability had not yielded a significant and systematically directed effect in Study 1 (conceptual IAT). Given initial evidence for the influence of affect on sociability ratings, and the findings obtained in Study 2a, we wanted to investigate whether this pattern tilts toward a relatively negative nonnative accent bias given auditory cues with the potential for negative perceptual influences.

Design and participants. In this laboratory experiment, we chose the auditory stimulus sets for French (attractive, recognizable, positive national associations), Italian (neither attractive nor unattractive, not recognizable), and Russian (unattractive, recognizable, negative national associations) accents as the basis for the auditory IAT. The study was completed by 30 participants per accent type ($N = 90$; 63.3% female, 36.7% male; $M_{\text{age}} = 21.71, SD_{\text{age}} = 2.51$; 81.1% native speakers of German).

Procedure. The procedure was almost the same as in Study 2a for the first session. However, participants were only randomized to one of six IATs (3 accent types

¹³i.e., $ns = 36$ for the French and Russian accent type compared to roughly 20 in the previous study.

× 2 block orders), with the attribute dimension always being sociability.

Study 2b: Results

For computing the IAT scores, no participant had to be excluded due to fast responses. Two responses were greater than 10.000 ms and thus deleted. The reliability of the sociability IAT was .60.

The average IAT effect was significant ($M = 0.46$, $SD = 0.38$), $t(89) = 11.66$, $p < .001$, $d = 1.23$, indicating relative negativity on sociability for nonnative accents compared to native speech. This effect was of a similar size as those obtained in Study 2a for the other dimensions (see Figure 2). Moreover, the 3 (accent type: French vs. Italian vs. Russian) × 2 (block order: incompatible first vs. compatible first) ANOVA revealed no significant main effect of accent type, $F(2, 84) = 1.46$, $p = .24$, $\eta_p^2 = .03$ ($M_{\text{French}} = 0.44$, $SD = 0.39$; $M_{\text{Italian}} = 0.55$, $SD = 0.34$; $M_{\text{Russian}} = 0.39$, $SD = 0.39$).¹⁴

Study 2b: Discussion

To conclude, a general IAT bias against nonnative accented speech also emerged on the sociability dimension given auditory stimuli. For now, this effect appears not to be moderated by accent type in a systematic way. Moreover, this effect was similar in size compared to the other dimensions assessed in Study 2a—a finding that contrasts the unsystematic bias of the conceptual sociability IAT in Study 1. Perceptions of foreignness and disfluency (and associated affective reactions) may account for this general negativity. We will return to this idea in the general discussion.

Study 3: Affect and Evaluative IATs

Finally, we sought to corroborate the previous findings by employing a conventional evaluative IAT (Greenwald, McGhee, & Schwartz, 1998), which has also been used in previous accent IATs (e.g., Pantos & Perkins, 2013; Vande Kamp, 2002). We aimed at replicating general IAT effects on the standard evaluative IAT next to the newly developed affect IAT. We further investigated the correlation of both IATs. Ideally, they should be related, but not identical (see Paladino et al., 2002). For this purpose, we assessed the affect IAT and the evaluative IAT within participants—in Study 3a for the conceptual variant and in Study 3b for the auditory

¹⁴The interaction with block order emerged by tendency, $F(2, 84) = 3.00$, $p = .06$, $\eta_p^2 = .07$. Post-hoc analyses with Bonferroni correction revealed no significant difference between accent types in the order *incompatible first* (all $ps > .63$). In the order *compatible first*, the score for Italian was larger than for Russian ($M = 0.55 > M = 0.22$, $p = .05$) with French in between ($M = 0.49$, $ps > .13$). It is puzzling why the IAT bias was relatively weak for the Russian accent condition in this order. If anything, one could have predicted a *higher* IAT score for Russian compared with Italian and French based on the accents' attractiveness and associated national stereotypes (see Appendix B in the supplemental material). Hence, this may be a random effect.

variant. Besides comparing the affect and evaluative IAT, this approach allowed for further testing the robustness of general biases against nonnative accents across IAT methods.

Study 3a: Conceptual IAT – Method

Participants. Fifty-one participants completed this study. We had to exclude five participants due to misconceptions about the accent concept, resulting in $N = 46$ (43.5% female, 56.5% male; $M_{\text{age}} = 22.43$ years, $SD_{\text{age}} = 3.21$; 89.1% native speakers of German).

Procedure and Material. The procedure was largely parallel to Study 1. The present study lasted 15 to 20 minutes. Participants completed both conceptual IATs (affect and evaluative) consecutively. The seven-block structure was retained for each IAT (the order of IATs and the block order of each IAT type were fully counterbalanced). The IAT types differed only in the attribute dimension. For affect, the labels were *positive/negative feelings* with five expressive faces per category (see Study 1). For the evaluative IAT, the labels were *good* versus *bad* with five words per category. As the attribute stimuli for conventional evaluative IATs are considered homogenous (see Nosek, Greenwald, & Banaji, 2005), we selected words that are also employed at the German Project Implicit homepage (n.d.), but do not relate to competence (e.g., failure), and do not point to inter/national affairs (e.g., peace). The selected good [Gut] and bad [Schlecht] attribute stimuli were: happy [Glücklich], love [Liebe], pleasure [Vergnügen], joy [Freude], wonderful [Wundervoll]—and terrible [Grausam], agony [Qual], awful [Schrecklich], nasty [Böse], horrible [Scheußlich], respectively.¹⁵

Study 3a: Conceptual IAT – Results

As in the previous conceptual IAT (Study 1), participants had indicated whether they had thought of specific accents while completing the classification task. Again, only a few participants (8.7%) answered in the affirmative, even after completing two IATs.

When computing the IAT scores, no participant had to be excluded due to fast responses, and only one response time > 10.000 ms had to be deleted. In the present within participants design, however, reliabilities were low, with .52 for affect and .53 for the evaluative IAT, which is problematic for investigating correlations (see John & Soto, 2007). Nonetheless, the IATs evidenced a medium correlation $r(44) = .38$, $p = .01$ (which remained when partialling out order effects).

¹⁵Participants filled out two questionnaires after the IATs (distractor task and explicit evaluations). Despite our focus on IAT effects, we had initially planned to explore correlation patterns for the affect and evaluative IAT. However, due to the (reliability) problems encountered in Studies 1 and 3a, correlations are difficult to interpret and are not discussed.

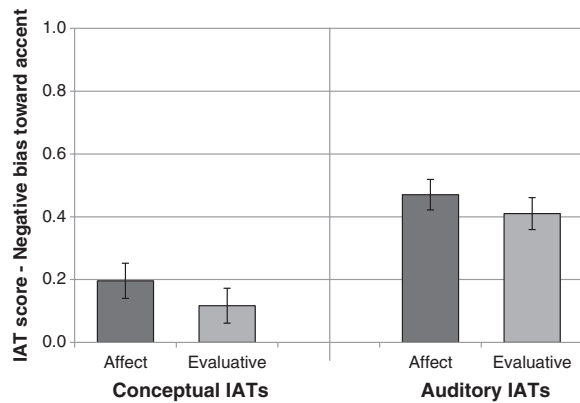


Fig. 3: Mean IAT scores per IAT dimension in Study 3a (conceptual IATs) and 3b (auditory IATs). Higher values indicate a relatively negative bias toward the target category Akzent (accent) versus Hochdeutsch (standard German). Error bars indicate standard errors

Moreover, significant IAT effects emerged for the affect IAT: $t(45) = 3.50, p = .001, d = 0.52$, and for the evaluative IAT: $t(45) = 2.10, p = .04, d = 0.31$. The means are displayed in Figure 3. A mixed ANOVA with IAT dimension as the within factor and block orders as between factors revealed no significant difference between the dimensions, $F(1, 38) = 1.67, p = .20, \eta_p^2 = .04$.¹⁶

Study 3b: Auditory IAT – Method

Participants. Fifty-two participants completed this study. One participant was excluded due to fast responses (30% responses <300 ms). Thus, $N = 51$ were retained for analyses (51.0% female, 47.0% male, 2.0% no gender indicated; $M_{age} = 22.40, SD_{age} = 4.40$; 80.4% native speakers).

Procedure. The present study lasted 10 to 15 minutes. The IAT procedure was largely parallel to Study 3a, with adaptations for the auditory IAT format (see Study 2). However, we only employed the two recognizable accent types (French vs. Russian). Participants were randomly assigned to one accent type. After IAT completion, participants completed a short questionnaire on demographic data.

Study 3b: Auditory IAT – Results

When computing the IAT scores, five responses >10.000 ms had to be deleted. The reliability was rather low for the affect IAT: .57 and satisfying for the evaluative IAT: .74. Their correlation emerged by tendency, $r(49) = .25, p = .08$.

Significant IAT effects emerged on both dimensions, for affect: $t(50) = 9.67, p < .001, d = 1.35$, and for the evaluative IAT: $t(50) = 8.06, p < .001, d = 1.13$. The means are displayed in Figure 3. A mixed ANOVA with

¹⁶The interaction of dimension and block order combination emerged by tendency, $F(3, 38) = 2.26, p = .10, \eta_p^2 = .15$, qualified by the three-way interaction with IAT-order, $F(3, 38) = 4.26, p = .01, \eta_p^2 = .25$. The cell comparisons were unsystematic, though, and cannot be interpreted meaningfully due to small cell sizes ($ns = 5-7$).

IAT dimension as the within factor and block orders and accent type as between factors revealed no significant difference between dimensions, $F(1, 35) = 0.48, p = .49, \eta_p^2 = .01$. Replicating the results of Study 2, the main effect of accent type was not significant, $F(1, 35) = 0.17, p = .68, \eta_p^2 = .01$, and neither was the Accent type \times Dimension interaction, $F(1, 35) = 0.003, p = .96, \eta_p^2 < .001$.¹⁷

Discussion

Studies 3a and 3b attest to negatively biased reactions toward nonnative accents versus native speech operationalized as mere concepts and diverse speech stimuli, respectively. Thereby, they replicate the emergence of general IAT biases with conceptual and auditory IAT variants we observed in the previous studies.

Moreover, the studies illustrate that the newly developed affect IAT and the conventional evaluative IAT both yielded significant IAT effects and evidenced medium correlations. Thus, these IATs appear to be related, but might measure different facets of spontaneous biases. However, due to partially low reliabilities, the present correlations should be regarded with caution. For future research, it seems advisable to investigate the IATs with larger samples and in different sessions, or between participants to avoid the low reliability we observed in the present studies (see also Gawronski, Deutsch, & Banse, 2011). Then, the IATs' discriminant validity also could be investigated with external criteria. An investigation with physiological measures and fight-flight preparedness reactions would be of particular interest because the newly developed affect IAT might be particularly suited to detecting early affective reactions that are difficult to verbalize (see Appendix A; Cacioppo, Berntson, Larsen, Poehlmann, & Ito, 2000; Chen & Bargh, 1999; Zajonc, 1980). For now, the results across studies converge in suggesting that the affect IAT appears to be a suitable and potentially complementary IAT variant.

Meta-Analysis: IAT Effects for the French versus Russian Accent Type

In line with our hypothesis of general spontaneous biases against nonnative accents, we observed significant IAT biases against all accent types across studies. If national group stereotypes played a role in these spontaneous reactions, one would further predict differences for the recognizable accents in the auditory IATs. Specifically, IAT biases for the French accent type (attractive, positive national associations) should have been smaller than for the Russian accent type (unattractive, negative national associations), particularly on the dimensions of affect and trust. Across the auditory IATs (Studies 2a,

¹⁷Only the interaction between accent, dimension, and block order combination was significant, $F(3, 35) = 4.32, p = .01, \eta_p^2 = .27$. The cell-comparisons were unsystematic, though, and cannot be interpreted meaningfully due to small cell sizes ($ns = 6-8$).

2b, 3b), we did not find evidence for such a moderation. However, the absent moderation of the IAT effects by accent type should be interpreted in light of power considerations.

Whereas the power to detect a medium-sized effect for the Accent type \times Dimension interaction (which was investigated in Study 2a) exceeded .90 (analysis with G*Power based on $N = 83$; Faul, Erdfelder, Lang, & Buchner, 2007), the power to detect a medium-sized effect for the between-groups comparisons of accent type ranged between .54 and .62 across studies. We therefore complemented the previous analyses with a meta-analytic approach. The central French and Russian accent types were implemented with the affect IAT in three samples (two independent samples in Study 2a, one in Study 3b) and could thus be analyzed meta-analytically. With three study samples and the achieved sample sizes (we have not conducted corresponding studies further than the ones reported here), the power to meta-analytically detect a medium effect size of $d = 0.5$ across studies with $\alpha = .05$ in a fixed-effects model was .94 (one-tailed for the specific hypothesis Russian > French)/.89 (two-tailed) (Hedges & Pigott, 2001; Valentine, Pigott, & Rothstein, 2010). We specified the fixed-effects model in Comprehensive Meta-Analysis (Version 3.3) (n.d.). The average standardized difference in means (for the Russian > French comparison) was slightly negative $d = -0.13$ and non-significant, (two-tailed) $p = .42$, 95% CI $[-0.43; 0.18]$. The Q statistic indicated no significant heterogeneity in the effects, $Q(2) = 0.55$, $p = .76$.

Hence, we did not detect evidence for an influence of the different (recognizable) accent types across studies. This further corroborates our idea of general spontaneous biases against nonnative accents. With the present sample sizes, however, we cannot rule out small effects of different accent types that might be detected with large sample sizes.

General Discussion

As it is true that one cannot not communicate (Watzlawick, Beavin, & Jackson, 1967), it is true that one cannot hide one's nonnative accent in speech. In the present research, we set out to investigate fast, spontaneous reactions to nonnative accents compared to native standard speech. How nonnative accents anchor impression formation has triggered a long-standing debate (e.g., Giles & Marlow, 2011; Rakić et al., 2011). Unlike previous approaches that have largely assumed social group associations, we adopted a more basic view in proposing negatively biased associations on basic dimensions—that should be linked to nonnative accents *in general*.

The present findings corroborate the hypothesis of such general associations. The results attest consistently to negative biases on the dimensions of affect, trust, and competence as well as evaluation. Biased reactions emerged in conceptual IATs (Studies 1, 3a)

when merely presenting category labels of nonnative accent versus native standard speech—without cues to sound attractiveness or accent-associated national origins. In auditory IATs with diverse speech samples (Studies 2a, 3b), the average competence bias emerged similarly high, whereas biases on affect, trust, and evaluation more than doubled. The auditory cues (contrary to concepts in Study 1) also appeared potent in eliciting a negative bias on sociability (Study 2b). This pattern of results substantiates the assumption of general perceptual influences (linked to foreignness and disfluency) next to category-based associations for nonnative accents. Intriguingly, auditory IAT biases were not moderated systematically by the accent type (French, Italian, Turkish, Russian), which differed in attractiveness and associated national stereotypes (see also the final meta-analysis). In sum, these findings suggest (a) that people may have a general concept of nonnative accents (implying a general nonnative accent category) and (b) that listeners exhibit general spontaneous reactions upon perceiving nonnative accents that, in this early stage, do not depend on social group associations.

General Nonnative Accent and Social Group Associations

This study series extends previous research by avoiding confounds between the concept of *nonnative accent* and specific social group associations (in the concept IATs), on the one hand, and by systematically investigating spontaneous reactions to diverse nonnative accents versus native standard speech (in the auditory IATs), on the other hand. Previous auditory IATs only relied on one speaker (Campbell-Kibler, 2012), one speaker per variety (Pantos & Perkins, 2013), or up to four speakers per variety without pretesting (Mitchell, 2009; Vande Kamp, 2002). We realized 16 matched-speaker pairs with extensively pretested material. To our knowledge, this is the first investigation of its kind regarding fast biases to the concept of nonnative accents and to real nonnative accents (against the standard of native speech)¹⁸ that systematically differed along the central dimensions of accent attractiveness, recognizability, and national associations. With these methodological approaches, the present results allow to infer basic associations that appear to be linked to nonnative accents in general.

We would like to highlight that our focus was on fast, spontaneous reactions to non-/native speech. For these early reactions, we assume general biases due to the spontaneous activation of a nonnative accent category and the general perceptual influences

¹⁸Single target adaptations are conceivable for future research; however, investigations of accented speech commonly contrast accented with native standard speech (for the IAT being a valid instrument, also when compared with single target adaptations, see Bar-Anan & Nosek, 2014).

(particularly of foreignness and disfluency). We do not, however, deem specific (national) associations unimportant (see, for instance, Frumkin, 2007; Hosoda & Stone-Romero, 2010; Schoel, Eck, Roessel, & Stahlberg, 2012). They may just be more effortful to derive (Dovidio & Gluszek, 2012; Mai & Hoffmann, 2014). If they moderate initial reactions at all, the effect may be rather small (see the final meta-analysis). The general spontaneous biases we observed in the present set of studies may bias further information processing (see Gawronski, Galdi, & Arcuri, 2015), and help explain, for instance, why marketing research does not observe benefits from allegedly positive nonnative accents (in contrast to regional varieties; Mai & Hoffmann, 2014). Moreover, these biases assist in the understanding of discrimination against nonnative accented speakers of different origins (e.g., Frumkin, 2007; Huang, Fridleger, & Pearce, 2013).

Future research should further test the influence of specific nonnative accents by varying the opportunity for elaboration (e.g., time constraints, cognitive load) and the salience of different accent origins, which may differ among listeners and with contextual cues. Regarding the latter, the auditory IATs could be realized with specific target labels (i.e., French accent, Russian accent, etc.). With this approach, the effort to conceive of a nationality (which may often be ambiguous and difficult to derive for nonnative accents) would be avoided, pertaining associations might be activated, and moderation by accent type might then be observed. Based on the presumed salience of nonnative accents as a global category and the influence of foreignness and disfluency perceptions, however, the prediction seems warranted that IAT biases would still evidence general negativity against auditory nonnative accent cues (even though target labels could likely shift the biases in the conceptual IATs). Such extended investigations would further help in understanding negative biases—and potential boundary conditions—for different accent types.

The Bases of Bias: Category-Based Associations and Beyond

The present approach may further reconcile the apparent dichotomy of social categorization versus general perceptual influences for nonnative accent perception (see Dragojevic & Giles, 2016, with a focus on disfluency). Integrative work on impression formation has highlighted that both routes may interactively contribute to social evaluations (see Johnson et al., 2015). In the introduction, we discussed how they (i.e., a general nonnative accent category and foreignness and disfluency perceptions accompanying nonnative accents) may work for the dimensions of affect, trust, and competence. Empirically, we demonstrated that categorization may suffice to trigger associations (see conceptual IATs: Studies 1, 3a). In addition, perceptions of realistic stimuli (even as short

as the present ones, $< 2 \text{ s}^{19}$) may exert an additional influence²⁰ (see Johnson et al., 2015; auditory IATs: Studies 2, 3b). Accordingly, the IAT patterns differed across studies in theoretically meaningful ways: The bias on competence was similar in size for both IAT types. This may reflect the strong competence stereotype with well-learned category-based associations. By contrast, the biases for affect, trust, and evaluation were relatively small in the conceptual IATs and were larger when audio stimuli served as targets. This pattern corroborates the presumed influence of foreignness and disfluency perceptions for these dimensions.

Against this background, the present findings also shed new light on warmth associations for nonnative accents. Contrary to the biases on trust (as the core of morality), we did not observe a systematic bias in the conceptual sociability IAT, which is in line with the unclear link between nonnative accents and sociability stereotypes. However, the sociability bias emerged as similar in size compared to the other biases for the auditory IAT. Without clear associations on sociability available, people may rely on their affective reactions (Zajonc, 1980)—as cued by foreignness and disfluency. Accordingly, the present approach offers a coherent explanation for relatively negative evaluations of nonnative accented speakers on warmth with more inherent associations for trust rather than sociability and the negative influence of perceptual dimensions.

Conclusion

Spontaneous reactions to nonnative accents may reflect general, basic associations that do not hinge on the attractiveness or specific group stereotypes behind the accents. Relatively negative biases on affect, trust, and competence appear to emerge generally and spontaneously when the social perceiver is merely confronted with the nonnative accent category or with diverse auditory cues of nonnative accents compared to native speech. Such initial negative reactions matter and may negatively bias further processing to the disadvantage of nonnative speakers.

Never before in history was international and interlinguistic exchange more prevalent. As we live in a

¹⁹Albeit short, these stimulus durations are relatively long compared to common IATs with visual stimuli. Therefore, we would like to point out that response times to auditory stimuli (on average across experiments: 1280 ms) closely match the stimulus durations (on average ca. 1200 ms; similar to previous auditory IATs, see Pantos & Perkins, 2013). Despite these relatively long stimulus durations and response times, response interference effects still emerged (as evident in the significant IAT effects).

²⁰For the auditory stimuli, we cannot tease apart these influences (for an approach tailored to disfluency, see Dragojevic & Giles, 2016). Indeed, it is likely that category-based associations will usually coincide with influences of perceptual dimensions for nonnative accents. Nonnative accents may be special in this regard because the non-/native status is usually encoded extremely quickly. Therefore, the *nonnative accent* category may generally be activated upon perceiving nonnative accents (in contrast to more ambiguous auditory categorizations, e.g., regarding sexual orientation; Fasoli et al., 2017).

world where people speak foreign languages, there need not be Babylonian language confusion. To benefit from the plurality of exchange across linguistic borders, we need to be open to recognizing and overcoming initial biases (Monteith, Arthur, & Flynn, 2010) against nonnative accents—a goal that the present work aims to contribute to.

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Supporting information

Additional Supporting Information may be found online in the supporting information tab for this article.

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