Towards capturing implicit innovative language attitude using an auditory Implicit Association Test[*]

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Since the birth of sociolinguistics the localization of innovative speakers has been regarded as a key issue in the study of language change. For this purpose, researchers traditionally categorize the speakers of a speech community on the basis of demographic and socioeconomic features; however, these parameters prove not to be sufficient to identify innovative speakers in all cases. It may be argued, however, that the speaker's implicit attitude towards linguistic innovations may also be captured and may be a good indicator of the speaker's innovative linguistic behavior. This line of research is not yet well elaborated on, probably due to the complexity of the attitude construct (which makes the measurement of implicit attitudes a challenging task), and the difficulty of grasping attitude towards linguistic innovations as such. The present study aims at addressing the potentials present in this aspect of sociolinguistic investigation. We review the psychological literature on the attitude construct and propose that a method borrowed from social psychology, the Implicit Association Test (IAT), may be adapted for the measurement of implicit attitude towards linguistic innovations if used with a linguistic variable that is subject to an ongoing language change as the test variable (or target). We report a pre-test conducted for variable selection for the adaptation of the IAT, and analyze data gathered by means of this newly created method for capturing implicit innovative linguistic attitude. We propose that this new IAT may be a useful tool in language change studies.

Keywords: IAT, implicit language attitude, language attitude, innovative attitude, language change, sociolinguistics

1   Introduction

Traditionally gender, age and socioeconomic status are regarded as important factors of language change, as they are suggested to enable to us to designate innovative speakers, the key figures of linguistic change (see. e.g., Labov 1980). These factors, however, do not appear to be sufficient in the identification of innovative speakers in all cases (see also Labov 1980). As a possible solution to this problem we argue that new methods in the detection of innovative speakers are necessary which allow researchers to identify potentially innovative linguistic behavior.

Language attitude, in particular implicit language attitude is another factor that is often addressed in sociolinguistics, but mostly in studies where the issue of stereotypes and language-based prejudice is addressed through the investigation of implicit attitudes towards linguistic variation (e.g., towards dialectal or accented speech) (see e.g., Pantos 2010 and Pantos & Perkins 2013 amongst others). Accordingly (and also based on several other sociologically important reasons), there is a constantly growing body of research investigating implicit language attitudes, where language attitude is generally defined as a disposition that is evoked by language, because speech is assumed to provide cues based on which a listener may assign supposed group memberships to the speaker (see e.g., Preston 2003). In a relatively smaller amount of research, attitude is also

considered as a disposition towards linguistic variants, like, for instance, linguistic innovations, and according to these interpretations, attitude may also play an important role in language change (see e.g., Hopkins 1977). Yet, when it comes to this possible interpretation of attitude and what it may offer the investigation of language change, only the surface has been scratched.

In the present study we propose a solution to the problem of locating innovative speakers by expanding the most common (or perhaps the traditional) interpretation of language attitude, and by proposing that innovative speakers may be characterized by a specific implicit attitude towards linguistic innovations as such. In this paper we also propose a possible way of operationalizing this specific implicit attitude for linguistic research.

We argue that the implicit attitude a language user may hold towards language change and linguistic innovations may be a crucial component in the user's involvement in language change processes and thus it should also be considered in studies of language change. To the authors' knowledge, this interpretation of implicit attitude is so far rarely studied empirically, probably for the following two reasons. The first may be the duality of attitudes and the nature of the implicit component (i.e., the nature of *implicit attitude*) which makes attitude a very difficult phenomenon to examine. The second may be the difficulty of grasping attitude towards linguistic innovations as such, since linguistic attitudes are generally considered only with respect to socially well-defined speaker groups and not towards more abstract linguistic structures or concepts; we discuss both of these issues in more detail in the following sections. In the present study we argue that a specific aspect of implicit innovative language attitude may be captured by measuring the automatic (implicit) evaluative reactions to innovative linguistic forms, and we propose a possible solution for measuring this specific aspect of implicit attitude by adapting the Implicit Association Test (IAT), a measurement tool of social psychology. We also claim that by applying this test for measuring implicit attitudes, we also overcome the difficulty of grasping abstract linguistic categories (as innovative or conservative linguistic variants) for testing, as already demonstrated by previous research.

In accordance with the above, the aim of the present paper is to elaborate on the proposal of interpreting implicit attitudes as implicit attitudes towards linguistic innovations, and to report on the process of creating the IAT capable of capturing implicit attitude of language users towards Linguistic Innovations (this test will hereafter be referred to as LI-IAT). We argue that for this purpose, a linguistic variable that is subject to an ongoing language change must be identified and used in an auditory IAT paradigm. We suggest that through capturing this specific aspect of implicit attitude towards linguistic change, the LI-IAT may be a useful tool in the study of language change in the future: as the LI-IAT measure can be an indicator of implicit attitudes towards language change, it may enable us to identify potentially innovative language users and thus to investigate ongoing language change processes reliably. It seems to be appropriate to also anticipate the long-term objective of the authors: our goal is to map the specific aspect of implicit linguistic attitude captured by LI-IAT to several types of language change, e.g., sound change, morphological change, or syntactic change. This way, we plan to assess which types of language change the LI-IAT measure can be a reliable indicator of. The study presented here is the first step in this process.

The present paper is structured as follows. Section 2 outlines the psychological background of the attitude construct for the study of attitudes in sociolinguistics. We provide a brief summary of the interpretation of language attitude in sociolinguistics while also offering a new interpretation of innovative language attitude. After reviewing

the relatively small number of previous studies on implicit innovative language attitude, we conclude by formulating our aims and discussing how all the above lead to the implementation of the auditory IAT in the measurement of implicit attitude towards linguistic innovations. Section 3 and 4 present two experiments: the first is conducted for variable selection for the adaptation of the IAT, while in the second some preliminary data are analyzed which were gathered by means of this newly created LI-IAT for capturing implicit innovative linguistic attitude. Section 5 provides a brief overview and discusses possible applications of the LI-IAT in language change studies, as well as future work.

2   Background

2.1   The attitude construct

The attitude construct has continuously been a topic of interest in the psychological literature resulting in complex and to some extent even diverging definitions of the concept. However, it is beyond the possibilities of the present study to review and reflect on this diversity of research and theory; we can only venture to give a brief and basic (thus necessarily simplifying) description of it to provide the theoretical basis of the present study.

According to the most popular model, the *expectancy-value model*, attitude is a summary of *evaluation*, where the evaluative meaning arises inevitably and spontaneously as a result of cognitive processes, namely *associations*. In this model attitude can be captured as an association between the attitude object and valued *attributes*: notions that are eligible to express *valence* (i.e. evaluative meaning),[1] such as the dimension of *good–bad*, *pleasant–unpleasant*, or *harmful–beneficial* (Ajzen 2001). Attitude, namely the evaluation-based categorization, or the measure of favorability is to be differentiated from *evaluation-free categorization* or *sorting* (for instance sorting food made of vegetables and food made of non-vegetable ingredients; for evidence of this differentiation, see e.g. Cacioppo et al. 1996 with respect to the field of neuropsychology), and from the notion of *affect,* which has been described as "states that contain degrees of valence as well as arousal" (Ajzen 2001: 29). In some theories affect is even assigned precedence to over cognition, i.e. attitude formation (see the *affective primacy hypothesis* in Ajzen 2001 and its references).

2.2   The model of dual attitudes

In the literature of psychology there is general agreement that the evaluation of psychological objects is inevitable and spontaneous. However, attitude is not necessarily univalent, that is, many circumstances may facilitate the development and holding of more than one attitude towards the same attitude object. According to one of the most influential theories, the *model of dual attitudes*, the duality of attitudes lies within attitude change: when attitudes change, the new attitude may not fully replace the older, more habitual attitude, but the two may keep co-existing which results in dual attitudes, i.e., in two simultaneous but not necessarily congruent evaluative reactions to the same object (Wilson et al. 2000). For instance, early acquired (and even repressed) prejudice may co-

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[1]   Valence in psychology is defined as the intrinsic attractiveness (positive valence) or aversiveness (negative valence) of an event, object or situation (see Frijda 1986, 207).

exist with later created egalitarian views. According to the theory of Wilson and his colleagues this duality may be grasped by differentiating between *explicit* and *implicit* attitudes. *Implicit attitude* is an evaluative disposition considered to be subconscious (outside of conscious awareness) (see also Greenwald & Banaji 1995), it is habitual, it is based on unidentified (or inaccurately identified) traces of past experience (Greenwald & Banaji 1995) and environmental impact (Karpinski & Hilton 2001), and it shapes the interaction with the attitude objects remarkably (or at least influences implicit or uncontrollable responses that one might not make an attempt to control) (Greenwald & Banaji 1995, Wilson et al. 2000). *Explicit attitude*, on the other hand, is considered to be more recently constructed, deliberately formed, or in other words, consciously accessible. Consequently, explicit attitude is the disposition we can report on directly. This is the case when we answer questions about our preferences, for instance. In such a context, implicit attitudes are "unavailable". Additionally, it should be emphasized again that implicit and explicit attitudes may diverge. Therefore, data gathered through explicit evaluative questions will necessarily be able to reflect consciously available, i.e., explicit attitudes exclusively, while implicit attitudes which may have the opposite valence of explicit attitude are almost always left unrevealed by direct questions and questionnaires (see e.g., Horwitz & Dovido 2015 on diverging explicit and implicit attitudes towards wealthy people or the results of Pantos 2010 and Pantos & Perkins 2013 on diverging explicit and implicit attitudes towards accented speech).

Before we further elaborate on the effect of the duality of attitudes on attitude measurements (and on other factors that may also have an impact), we briefly discuss another aspect of attitude, namely *ambivalence,* that should clearly be differentiated from *duality* described above. Ambivalence is the co-existing positive and negative disposition toward the same object, but in this case, the conflict does not stem from the different "layers" of attitude (that differ in conscious availability), but the evaluation of the same objects on *different dimensions* resulting in a conflict within the cognitive component or in a conflict between affect and cognition (see e.g., Ajzen 2001). We present one example that illustrates this differentiation. In one of their studies MacDonald and Zanna (1998) asked male participants to evaluate feminist candidates in a job interview situation on two dimensions: *admiration* and *affection.* According to their results, males rated feminists positively on the dimension of admiration, but negatively on the dimension of affection, that is, they were proved to be holding ambivalent attitudes toward feminists, which was not the result of the implicit–explicit opposition, since evaluation on both dimensions was assessed on the basis of self-report. Therefore, the concept of ambivalence is clearly out of the scope of the present discussion, and will not be further discussed in the present study.

As already mentioned, the duality of attitudes, in other words, the separation of implicit and explicit attitudes poses a problem to attitude measurements, as data gathered through explicit evaluative questions will necessarily be able to reflect explicit attitudes exclusively. However, in many cases (e.g., in the case of the evaluation of linguistic innovations, i.e., innovative linguistic behaviour) we may assume that it is rather the implicit attitudes that are of interest. Moreover, the issue of the most frequently studied response bias, "socially desirable responding" (Paulhus 1991, 17), also comes into play when one investigates attitudes towards a socially sensitive area, at least if one does so through direct questions, self-reports or other explicit measurements. According to studies in social psychology, in those cases, when the attitude object is considered to be a socially sensitive object, attitudes measured by explicit evaluative questions tend to show a social desirability bias, i.e., in responding the informants try to respond according to

their beliefs about what a socially more acceptable response is and not in a way that reveals how they actually feel or believe (Holtgraves 2004). To give a basic impression of what this statement means, we cite Holtgraves' examples: according to studies conducted in the USA, people tend to overreport their engagement in socially desirable behaviors, such as attending religious services and voting, but underreport engaging in socially undesirable behaviors such as substance abuse (see Holtgraves 2004). According to Holtgraves (2004), social desirability operates as an "editing process": participants retrieve the requested information (e.g. the answer to an explicit question), but they also evaluate it before responding: they assess whether the response would make them look good or not. If truthfulness interferes with social desirability, respondents may respond according to the latter. Generally speaking, both the duality of attitudes and the social desirability bias pose a serious problem to the investigation of implicit and even to explicit attitudes. As direct questions may only reflect explicit attitudes, attitudes in connection with stereotypes and prejudice are even more difficult to reveal, due to the fact that informants may often tend to respond according to socially more acceptable attitudes (i.e., according to social solidarity and equality), and the attitudes that are not in line with these ideal dispositions may remain "covered".

Arriving at the focus of our present study, the consequences of the above factors can be summarized as follows. The measurement of explicit and implicit attitudes towards attitude objects, in our case, specific (innovative) language forms, is a demanding task, but it is of great importance. In certain areas of behavior, including language behavior or language use, some attitudes are a matter of prestige, while others are incorrect, substandard, not appropriate or stigmatized. Therefore, when investigating these areas the issue of socially desirable responding should also be taken into account. Moreover, in the case of innovative linguistic behavior, i.e., in the acceptance or use of innovative language elements it may well be assumed that implicit attitude is a key component. (Probably almost everyone had the experience of a friend who has expressed some negative opinion about a stigmatized linguistic form, and used it him- or herself just a few minutes later.). Implicit attitudes are, however, out of conscious awareness. These problems are serious, but can be overcome by using implicit attitude measures to detect innovative linguistic attitude.

2.3   Measurements of implicit attitudes: the Implicit Association Test

To gain access to implicit cognitions (a domain not reached by self-report measures) several solutions have been tested (for a short summary, see e.g. Karpinski & Hilton 2001). Among them, one of the most influential and widely used techniques is the Implicit Association Test (IAT). The IAT is a simple evaluation-free categorization task where implicit preference, i.e., positive attitude towards the attitude object is only deduced from response latency (i.e., reaction time, RT). The IAT is based on the notion of attitude being an association between the attitude object (*target*) and attributes with positive and negative valence (*attribute*). The principle of the method is that the ability to quickly sort the target items and attribute items to their corresponding categories reflects the strength of association within the two pairs of opposing target–attribute categories that have to be sorted together. Accordingly, in the IAT paradigm RT data are considered to be correlates of attitude strength (see e.g. Greenwald et al. 1998).

Figure 1 illustrates the basic IAT design, and in the next paragraph we will briefly go through the illustration to demonstrate how the IAT works in practice.

	Categories (and category labels)	Items
Target	BIRD	*cardinal, warbler, blackbird, robin*
	INSECT	*cicada, locust, bee, mosquito*
Attribute	PLEASANT	*cuddle, happy, smile, joy*
	UNPLEASANT	*abuse, crash, disaster, grief*

	Left	Right
Block 1:	BIRD	INSECT
Block 2:	PLEASANT	UNPLEASANT
Block 3:	BIRD OR PLEASANT	INSECT OR UNPLEASANT
Block 4:	BIRD OR PLEASANT	INSECT OR UNPLEASANT
Block 5:	INSECT	BIRD
Block 6:	INSECT OR PLEASANT	BIRD OR UNPLEASANT
Block 7:	INSECT OR PLEASANT	BIRD OR UNPLEASANT

Figure 1: *Illustration of the Implicit Association Test (IAT), adapted from Vande Kamp (2002, 3)*

Before the test, participants familiarize themselves with the *categories* and the corresponding *items* to be used in the test. There are always two opposing target categories (here, BIRD vs. INSECT) and two opposing attribute categories (here, PLEASANT vs. UNPLEASANT), resulting in a total of four categories and four category labels. In Block 1 participants acquire the assignment of the left and right sides (of the computer screen) to the two *target* categories (BIRD vs. INSECT) by sorting the target items appearing in the middle of the screen, according to the target labels that are visible in the two upper corners (sorting administered by key press, usually E for left, and I for right). Next, in Block 2 the participants also learn the assignment of the two *attribute* categories (PLEASANT vs. UNPLEASANT) by sorting the corresponding attribute items according to the two attribute category labels visible in the upper corners again. In Block 3 the attribute and target category labels appear *together* with the conjunction *or* (e.g., BIRD OR PLEASANT on the left and INSECT OR UNPLEASANT on the right), and attribute and target items are to be sorted simultaneously: target items (e.g., *cardinal*) according to target labels, and attribute items (e.g., *happy*) according to attribute labels (note that although target and attribute items appear in succession, participants still sort target items according to target labels, and not attribute labels, thus no explicit evaluation is required). This task is repeated in Block 4. In Block 5 the inverse assignment of target labels is acquired by sorting target items again, according to the new (inverse) set-up of labels. In Block 6 attribute and target labels appear together again in the second attribute + target combination (since attribute labels are displayed unchanged), and participants sort all the target items and attribute items (similarly to Block 3 and 4). In Block 7 the task of Block 6 is repeated.

The IAT is based on the idea that if highly associated concepts share the same side (and the same key response), participants are able to categorize items much faster than in the opposite combination (when weakly associated concept share sides and key responses). Therefore, to calculate the IAT effect the *congruent* (i.e., expected stronger association, e.g., *bird* and *pleasant*) and *incongruent* (i.e., expected weaker association, e.g., *insect* and *pleasant*) blocks must be compared. As one attribute + target alignment is

predicted to be easier than the other attribute + target combination, Block 4, 5, 6 and 7 basically consists of "congruent" or 'easy' and "incongruent" or 'hard' blocks. The IAT effect is quantified for each participant as a so called *D measure*: trials greater than 10,000 ms are deleted; "inclusive" (pooled) standard deviation for congruent blocks (Block 3 and 6, in the first setting), and incongruent blocks (Block 4 and 7) are computed; the mean latency of the congruent block is subtracted from the mean latency of the incongruent block ($Mean_{Block\ 6} - Mean_{Block\ 3}$ and $Mean_{Block\ 7} - Mean_{Block\ 4}$); each difference is divided by the corresponding pooled (inclusive) standard deviation; *D* equals the equal-weight average of the two resulting ratios (for further description see Greenwald et al. 2003). The value of *D* is normalized between −2 and 2 where effect size criteria meet the requirements of (and thus are interpreted similarly to) Cohen's *d*: $-.15 < D < .15$: *no effect;* $.15 \leq D < .35$ or $-.15 \geq D > -.35$: *weak effect;* $.35 \leq D < .65$ or $-.65 \geq D > -.65$: *medium effect;* $.65 \leq D$ or $-.65 \geq D$: *strong effect,* where positive values represent implicit bias in the *congruent* direction, and negative values reflect implicit bias in the *incongruent* direction (see e.g., Greenwald et al. 2003).

IAT was originally designed for sorting visual stimuli (strings or pictures). This is because the majority of implicit attitude detection studies is concerned with the issues of prejudice detection and stereotypes (i.e., attitudes toward racial and ethnical minorities, overweight people, etc.), and stereotypical groups can easily be represented with typical names or faces. However, there is no doubt that in human interaction socially meaningful variation of linguistic forms is also a common way to identify group membership, thus activation of stereotypes triggered by linguistic forms is a key issue in sociolinguistics and social psychology and should not be neglected either (Campbell-Kilber 2012). Recognizing the above, the IAT paradigm was also tested (and tested successfully) with auditory prompts. In his dissertation, Vande Kamp (2002) demonstrated that the auditory IAT is a reliable and useful extension of the IAT that consists entirely of visual stimuli, either if the sounds to be sorted are words (as given in Figure 1), or if the speaking voices are socially meaningful (e.g., the voice of European-American or African-American speakers).

In some studies IAT was also used to address questions that are relevant particularly from a sociolinguistic perspective. Pantos (2010) and Pantos and Perkins (2013) investigated foreign-accented speech versus non-accented speech. Their findings demonstrated implicit bias toward the non-accented speech, that is, they provided evidence that speakers favor their native language and their own accent over foreign-accented speech. Furthermore, the authors also obtained explicit measures (by means of self-report) which indicated an explicit bias in the opposite direction, that is, explicitly informants seemed to favor the foreign-accented speaker. These findings demonstrate that implicit and explicit attitudes are separable and often also diverging constructs, and they also exemplify how the so called social desirability bias may exert its influence on linguistic attitudes.

Using the auditory IAT paradigm, Kathryn Campbell-Kibler (2012) provided further insights. She recognized that studying implicit associations in the research of attitudes should not necessarily be restricted to the investigation of attitude object–value alignment (as in the case of the accented–non-accented speech and good–bad category, for instance), but may also be used to investigate any kind of alignments that may be meaningful sociolinguistically. She claimed that sociolinguistics may also benefit from studying association strength between linguistic forms (which activate stereotypical groups) and stereotypically associated concepts (region, education, socioeconomic status, etc.). Campbell-Kibler used auditory language variables (e.g., *talkin'* vs. *talking*) to activate

stereotypes and associated them with professions and the names of prototypical northern and southern states to gather some insight into the *meaning* of previously detected stereotypes (reported by sociolinguistics in many previous studies). Campbell-Kibler created several IATs using visual and auditory stimuli, and she used abstract metalinguistic category labels referring to linguistic variants as e.g., –IN and –ING (referring to the *talkin'* versus *talking* opposition). Both of these solutions proved to be appropriate for the categorization test the IAT is based on, and demonstrated that the difficulty of grasping abstract linguistic categories may be overcome by using the IAT paradigm and simple metalinguistic labels.

To summarize shortly, the above studies demonstrated that i. IAT is a useful tool in implicit attitude detection if used with auditory prompts, ii. IAT may be used to detect sociolinguistically relevant attitudes, and iii. that the use of IAT should not be restricted to the detection of stereotypes.

2.4 Attitude in linguistic studies and the interpretation of the concept proposed in the present study

In sociolinguistics the term *language attitude* is predominantly used for evaluative disposition towards linguistic variants in language variation that may serve as cues for the listener to identify the speaker's group membership (see e.g., Preston 2003). This is particularly true in the case of Hungarian sociolinguistics where language attitude is used and studied exclusively with respect to regional variants of Hungarian, or (to a lesser extent) foreign-accented Hungarian speech (see e.g., Kiss 2000 and references therein). This is most probably due to the fact that the study of language-based evaluation in sociolinguistic research is in many cases motivated by prejudice detection and detection of stereotypes associated with stereotypical groups, and activated by typical language use of the group members (e.g., accents or dialects).

In Hungarian research, most of the studies used explicit attitude measures to draw conclusions on attitude in general: they elicited the set of beliefs on language norms and standards combined with beliefs about socially expected responses to the assumed substandard forms. Additionally, some studies also introduced techniques to elicit a manifestation of implicit attitude. Sándor et al. (1998), for instance, used the *matched guise paradigm* (see Lambert et al. 1960, and e.g., Mac-Farlane & Stuart-Smith 2012 for a later adaptation of the technique in the study of sound change processes). In this paradigm the participants are told that they would hear several different speakers, and their task is to evaluate these speakers on the basis of the (recorded or live) utterances on several dimensions, e.g., intellect or reliability which are considered to be implicit inquiries about the likeability of the person in the analysis. In reality, however, the instruction introduces a deception, since all of the utterances attributed to different speakers are provided by only one speaker varying his/her own production by shifting styles between utterances. As a result, the matched-guise paradigm has two advantages because of which it qualifies as a more sensible choice to measure attitudes than direct-questions or questionnaires. First, the listeners actually evaluate linguistic variants and not speakers on the given dimensions, since voice-specific effects which would cloud the relationship between the linguistic variable and the evaluative response are controlled for (i.e., the only difference between the utterances is the linguistic variable under consideration). Second, the listeners evaluate linguistic variants through answering implicit questions, since they are not asked to express favorability, but to assign cognitive, physical or other capabilities or characteristics to the speaker. In the study of Sándor and colleagues (1998) one group of

listeners heard a speaker speaking only standard Hungarian, while another group heard him speaking only his native regional dialect of Hungarian. As expected on the basis of previous literature on language attitude and prestige forms, the speaker was preferred (assessed on the basis of evaluation on personality dimensions) when he used standard Hungarian.

It is important to note, however, that implicit methods, such as the matched-guise paradigm do not necessarily (or may not at all) reflect implicit attitudes, as one might always have the chance to catch his or her own stereotype activating while forming a reaction to an implicit question, and thus the social desirability bias may arise as an editing phase before giving a response to the question (as proposed by Holtgraves 2004). In order to detect implicit attitudes (and to overcome the limitation of self-reports), psychological methods may provide the optimal solution, as they do not require the participants to report on a subjective assessment, but infer attitude from other measures. One of these and probably also one of the most influential ones is, as already mentioned, the IAT paradigm.[2] In sociolinguistic studies, however, these psychological methods are used only to a limited extent, at least with respect to the issues addressed by these implicit methods. To the authors' knowledge, most of these applications involve the IAT (or a modification of it), and study only stereotypes or prejudice against linguistic variables that represent a stereotypical group of people (see e.g., the studies already mentioned: Pantos 2010, Pantos & Perkins 2013 investigating attitudes towards accented speech). Only a few studies ventured to further explore the potentials of these methods in sociolinguistics, like e.g., Campbell-Kibler who investigated sociolinguistic meaning by aligning the linguistic variables with concepts that did not "simply" express valence in an IAT (discussed above), but may index some other sociolinguistically relevant meanings.

Returning to the interpretation of the concept of language attitude in sociolinguistic studies, we argue that besides referring to the disposition towards the language use of stereotypical groups, this term's use can be broadened to encompass attitude towards language itself (as indicated also by e.g., Hopkins 1977). More specifically, language attitude may also be interpreted as a disposition towards linguistic phenomena, for instance, linguistic innovations. In this interpretation, innovative language attitude is conceived as a disposition that is held against innovative linguistic variants (or even towards a group of innovative linguistic variants), and in this way it is interpreted as an attitude towards language change itself. But what would we gain if we interpreted language attitude as an attitude held against linguistic variants (and not towards a group of people they might represent if this group is existent at all), and innovative language attitude as an attitude towards linguistic innovations and language change?

As Labov pointed out (emphasized in the review of Milroy and Milroy 1985, referring to Labov 1980), there are certain groups of the society who use language innovations more than others, and these are the groups who basically initiate the diffusion of linguistic innovations (see e.g., Milroy and Milroy 1985). Hence, Labov (and a great number of scholars after him) concluded that the localization of these groups, i.e., the groups of innovative speakers is a key issue in the study of language change. However, Labov also demonstrated in his studies that these groups cannot be localized easily, as these groups are not easy to characterize only by means of some demographic features or the speakers' socioeconomic status (see also the comments from Milroy &

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[2]   There are, of course, many other implicit methods, like the Go/No-Go Association Task, priming tasks, etc., for a summary see e.g., Gawronksi & de Houwer (2014).

Milroy 1985). Luckily, demographic mapping is not necessarily the only solution to identify innovative speakers, if we assume that these speakers are characterized by a specific kind of implicit attitude towards linguistic innovations.

Based on what is known about attitude from social psychology, automatic preference and usage of certain linguistic forms can be considered as the manifestation of implicit attitude. Therefore, we argue that if we are able to identify some innovative forms in a given language (that are currently subject to an ongoing language change), and we are also able to detect speakers who prefer these forms, we basically managed to identify a group of innovative speakers without making the mistake of drawing misleading conclusions regarding innovative linguistic behavior purely on the basis of demographic data. In other words, we propose that a specific aspect of implicit innovative language attitude may be captured by measuring the automatic (implicit) evaluative reactions (i.e., the implicit attitudes) towards particular innovative linguistic forms, and this evaluative reaction then may be used as an independent variable in the investigation of language change processes.

Naturally, this interpretation of innovative language attitude, that is, the attitude towards a linguistic innovation cannot be understood as a direct predictor of innovative behavior in the production of this particular linguistic innovation, as implicit attitudes are never taken as predictors of behavior without further experimental evidence gathered in psychology either. To understand clearly how the implicit innovative linguistic attitude towards a specific linguistic innovation interacts with the production of the given linguistic form, a considerable amount of further empirical evidence would be needed (which would probably still not clarify the interaction fully, as is experienced in psychology). However, this interaction is actually of no great importance, if the measure of this implicit attitude is interpreted merely as an indicator of tolerance or acceptance of linguistic innovations as such. This way we may operationalize a specific aspect of implicit innovative linguistic attitude that may afterwards be also considered as a possible predictor of (perceptive or productive) innovative linguistic behavior in the case of other independent language change processes as an independent variable. In this sense, a new (and even numerical!) measure reflecting a particular aspect of implicit innovative linguistic attitude may inevitably be an unprecedented advance towards a research method that enables researchers to identify speakers of potentially innovative linguistic behavior. In summary, we argue that through interpreting implicit innovative language attitude as an implicit attitude towards linguistic innovations, the investigation of ongoing language change processes gains a new and useful aspect. Accordingly, we also propose to make an attempt to operationalize this implicit attitude to turn it into a numerically expressed independent variable.

There is a new line of research emphasizing the above described interpretation of language attitude and its role in language change processes. These studies made use of identifying innovative speakers on the basis of the detection of their implicit language attitude towards specific substandard linguistic forms. Mády (2012) aimed at investigating the neutralization of vowel quantity distinction in the case of the Hungarian /o u/ and designated two groups of listeners who were separable based on a test designed to detect language attitude based on instant assessment of language forms. To assess implicit (or rather "semi-conscious") attitude, Mády created a "quasi-offline" explicit evaluation task (here "quasi-offline" means that no RT data was measured, but the response time for the offline answers was limited by the time course of the sound file used in the test): she

concatenated a set of substandard linguistic forms[3] into one audio file, and asked the listeners to spot the "incorrect" forms in it. Supposing that tolerance against substandard linguistic forms, that is, the lack of susceptibility to spot the "errors" is the manifestation of implicit innovative language attitude, Mády used the number of the spotted substandard forms as a measure of implicit conservative language attitude, while innovative attitude was basically defined as the lack of the susceptibility to spot these "errors". The most important result found in the study was that the two groups of listeners separated on the basis of their performance in the implicit task also showed a tendency to perceive the quantity of vowels differently based on their tenseness (i.e., quality difference or spectral difference) which she considered to be a reflection of an ongoing sound change process. Based on these results, Mády also claimed that implicit attitude should be considered as a factor influencing perception, thus it should also be considered as a factor possibly affecting sound change processes. In a second study Mády and Rácz (2013) investigated the sustained /a i u/ (and also the production of /o u/ in embedded words) and found that both young and innovative speakers tended to increase their formant frequencies F1 and F2 for sustained vowels compared to old and conservative speakers (again, innovative attitude was defined on the basis of the evaluative test used in Mády (2012). Therefore, Mády and Rácz claimed that the lowering of the first two formants, i.e., the slightly centralized production of vowels is not purely a result of aging but also of implicit language attitude.

2.5   Aims of the study

The long-term purpose of the authors of the present paper is to follow up on the proposal of Mády (2012) and to develop a test that enables the detection of implicit innovative language attitude directly and reliably. It is suggested that such an implicit attitude test might allow future research addressing the issue of language change to identify innovative speakers independently of demographic data and also of the linguistic variants at question, thus opening up new possibilities in the investigation of language change processes. It is proposed that the reliability of the implicit attitude test used by Mády (2012) can be improved in two aspects. First, the efficacy of bypassing conscious control can be increased by using a completely implicit task (including no explicit evaluation). Second, the efficacy of the detection of innovators may be improved, if we do not detect the respondents' susceptibility to identify speech errors, stable variations or substandard forms (as in Mády 2012), but we include an innovative linguistic form in the implicit method, a form that is assumed to be part of an ongoing language change. Therefore, to develop the implicit innovative language attitude test we propose the following.

First, we suggest the use of the auditory IAT design to detect implicit innovative language attitude directly. The auditory IAT is considered optimal (at least as a first attempt) for two reasons. On the one hand, this paradigm allows for the use of auditory stimuli which is probably the best solution if innovative linguistic forms are to be presented as target items, as innovative variants appear first in spontaneous speech and

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[3]   i. Variables that show stable variation, such as e.g., the illative case marking suffix *-ba/-be* used in inessive case instead of the inessive case marking suffix *-ban/-ben*; ii. errors like *öbölt* instead of *öblöt* 'bay+ACC'); iii. some non-frequent loan words not used in standard texts, like *sréhen* 'diagonal'; and iv. forms that are characteristic of spontaneous speech, such as the use of the discourse marker *így* approx. 'like'.

may thus appear more natural in an experimental situation if presented to listeners also in speech. On the other hand, we suppose that in the case of the tested opposing target categories, i.e., the innovative and conservative linguistic forms, the conservative is likely to be preferred over the other by conservative users, which is also the rationale behind the IAT paradigm.

Second, we claim that the IAT capturing the implicit attitude of language users towards Linguistic Innovations (referred to as the LI-IAT) should include a linguistic form that is assumed to be part of an ongoing change as test variable. Although, as argued above, this LI-IAT measure may not reflect or predict the production of this particular linguistic innovation we use in the LI-IAT, it should not be considered as a problem, since we only aim to operationalize potentially innovative attitudes towards linguistic innovations.

In line with the second claim, the first practical aim of the study is to carry out an experiment to identify a linguistic variable that is subject to an ongoing change. Based on the test results we create the LI-IAT: we use the innovative ("newer") and conservative ("older") forms of the chosen linguistic variable as contrasting target categories. As attribute categories that are eligible to express valence and thus to evaluate automatic preferences, we decided to opt for the most common good versus bad concept pair.

As a second practical aim of the present study we plan to test the functioning of the newly created LI-IAT, and gather data with randomly sampled informants. The most common numeric output of an IAT is the so called D measure or D score (see Section 2.3) which is generally interpreted as preference of one target category (negative values) or the other (positive values) or no preference (around the value of zero) at a particular target-attribute alignment. However, in the case of the implicit innovative linguistic attitude it is not obvious how to interpret these values. While speakers with conservative implicit attitude may (perhaps straightforwardly) be conceptualized with a preference for the conservative linguistic form, speakers with an innovative implicit attitude may be expected to have a preference for the innovative form, or no preference whatsoever (for further discussion of this problem see the introduction of Section 4). Therefore, we argue that the clarification of the optimal interpretation of the D measure is a long process; in order to understand the nature of the implicit attitude captured by the LI-IAT we need to carry out several thorough empirical studies on language change processes already described for contemporary Hungarian using this new method. In this process we basically plan to map the specific aspect of implicit innovative linguistic attitude that is captured by the LI-IAT to several types of language change processes and also to innovative behavior regarding speech production and perception, in order to assess which type of behavior this specific aspect of implicit attitude (i.e., the D measure of the LI-IAT) can be a reliable indicator of. Consequently, the optimal interpretation of the D scores obtainable by LI-IAT cannot be discussed here. However, we can raise questions regarding possible interpretations of the data and gain basic impressions on the basis of the first data set. Also, we plan to evaluate any design-related biases of the LI-IAT by means of testing normal distribution of the data which is an expected criterion if larger amount of data is collected.

In the following sections we report on the pre-test designed to designate a linguistic variable sufficient for the purposes of an auditory LI-IAT and we also report on the first data that were gathered by means of this newly created LI-IAT in order to explore some of the basic features of the specific aspect of the implicit attitude the LI-IAT's output defines.

3   Experiment 1

To build the LI-IAT, the first step is to identify language variables that are most probably subject to an ongoing language change, and thus have a new or innovative form and an older, conservative one which (in at least some speakers' cases) are competing in language use. To recognize language change in progress, it is assumed that one has to show that a variant has started diffusing in a speech community. For this purpose in the present study we conducted a survey applying the *apparent time construct*, that is, we compared a younger and an older group of speakers' evaluative responses to the linguistic variables at hand, so that we could detect if the evaluative responses differ across age groups.

Since the groundbreaking work of Labov, sociolinguistic literature follows the assumption that the difference in use or in the evaluation of language variables accompanying age is (or may be) an indicator of an ongoing language change (see e.g., Labov 1963, 1966 [2006]). However, it is certainly an issue whether the differences found between age groups should be regarded as "the linguistic change at the community level", or rather "the linguistic change at the individual level", or in other words, whether the change that is bound to the individual's lifespan, i.e., *age grading* (Wagner 2012, 371). The main cause of this differentiation problem is that age grading is indistinguishable from generational change in progress when only apparent time data are available (Wagner 2012).

As it is an old debate in the literature, there is plenty of evidence for and against the reliability of the apparent time construct in the detection of generational change. Nevertheless, drawing on the research of Sankoff (2006), in the present paper we accept the reliability of this method. Reviewing thirteen replication studies of previous research (that used apparent time), Sankoff (2006) found that language change detected in apparent time was confirmed by real time (longitudinal) analysis in all cases. Therefore, she concluded that the apparent time construct is a valid and reliable means of language change detection in most cases. On this basis, although we subscribe to the idea to the fact that apparent time may reflect both age grading and language change to some extent, we assume that a difference found in the language use of older and younger age groups, more specifically, the difference found in the evaluation of particular linguistic variants between older and younger age groups, may be a reliable indicator of an ongoing language change.

As introduced in the previous section, implicit or habitual attitudes are in many cases non-accessible through explicit questions, i.e., questionnaires. Questionnaires, however, are a good means of identifying standards, as they reflect explicit attitude, and they also reflect the social desirability bias: they reflect recently constructed or deliberately formed dispositions and beliefs, and beliefs about what is "socially desirable". Therefore, in Experiment 1 we used a questionnaire to identify the "standards" or explicit bias of speakers in the case of eleven linguistic elements that have two co-existing variants. (For further details, see Section 3.1). The aim of Experiment 1 was to test which of the studied elements proves to be part of an ongoing language change, and thus qualifies as an appropriate variable for the IAT.

3.1   The linguistic variables tested in Experiment 1

In order to find variables that could be tested with the LI-IAT, we assembled a list of 11 structures that were assumed to exhibit variation in MSH either on the basis of our own

observations or according to the literature (most notably Nádasdy 2008). Then we carried out two pre-tests with these variables. On the one hand, we tested the occurrences of their variants in the Hungarian National Corpus (http://clara.nytud.hu/mnsz2-dev/bonito/run.cgi/first_form; for a description, see Oravecz et al. 2014) in order to see whether their distribution shows characteristic patterns. On the other hand, these variables were also tested with the help of informants. In what follows, we will give a brief structural description of each tested variable and summarize the results of the grammaticality judgement test conducted with informants. Throughout the discussion the variants of each variable will be uniformly labeled as "more frequent"/"less frequent", and these labels were assigned on the basis of the corpus study. However, the detailed description of the corpus inquiry and a more thorough structural analysis of the variables would greatly exceed the limits of this paper; therefore, we have made these additional materials accessible in a separate file.[4]

The test asking for native speaker judgement contained the following 11 structures. Each of these are illustrated below with a typical example, with the more frequent variant highlighted in boldface.[5]

(1) Article drop in sentence-initial position:

    a. ***Az ajtók*** *a bal oldalon nyílnak.*
        The door.PL the left side.SUP open.PRS.3PL
    b. *Ajtók a bal oldalon nyílnak.*
       door.PL the left side.SUP open.PRS.3PL
       'Doors open on the left'

(2) Article drop before names of institutions:

    a. *Bemegyek* ***a Nyugatiba*** *jegyet venni.*
        stop.by.PRS.1SG the Western.ILL ticket.ACC buy.INF
    b. *Bemegyek Nyugatiba jegyet venni.*
       stop.by.PRS.1SG Western.ILL ticket.ACC buy.INF
       'I stop by Nyugati [=Western Railway Station] to buy tickets'

(3) Article drop in non-sentence-initial position:

    a. *Túrázni volt* ***a családjával.***
        hiking.INF was the family.3SG.INS
    b. *Túrázni volt családjával.*
       hiking.INF was family.3SG.INS
       'She went hiking with her family '

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   [4] http://full.btk.ppke.hu/index.php/FULL/article/view/50/61
   [5] List of glosses used in the present paper: ACC = accusative; DAT = dative; FUT = future, ILL = illative; INF = infinitive; INS = instrumental; MOD = marker of epistemic modality; PL = plural; PRS= present; PST = past; PV = preverb, SUP= superessive.

(4) Presence or absence of the subordinator *hogy* in sentences with the verb *lehet*:

  a. **_Lehet,_**   **_hogy_** *ő* *is* *eljön.*
    be.MOD.PRS.3SG that (s)he too come.PRS.3SG
  b. *Lehet,*   *ő* *is* *eljön.*
    be.MOD.PRS.3SG (s)he too come.PRS.3SG
    'It's possible that (s)he comes over, too'

(5) Presence or absence of the subordinator *hogy* in sentences with the sentence adverbial *természetesen* 'naturally':

  a. **_Természetesen_** *pontosan* *érkezik.*
    Naturally   on.time arrive.PRS.3SG
  b. *Természetesen,* *hogy* *pontosan* *érkezik.*
    Naturally,   that on.time arrive.PRS.3SG
    'Naturally, (s)he arrives on time.'

(6) Presence or absence of the subordinator *hogy* in sentences with the sentence adverbial *valószínűleg* 'probably':

  a. **_Valószínűleg_** *holnap* *János* *is* *ott* *lesz.*
    probably   tomorrow John too there be.FUT.3SG
  b. *Valószínűleg,* *hogy* *holnap* *János* *is* *ott* *lesz.*
    probably   that tomorrow John too there be.FUT.3SG
    'Probably John will be there tomorrow'

(7) Presence or absence of the subordinator *hogy* in sentences with the sentence adverbial *nyilván* 'obviously':

  a. **_Nyilván_** *az* *én* *ebédemet*   *ette*   *meg.*
    obviously the my lunch.1SG.ACC eat.PST.3SG<3SG PV
  b. *Nyilván,* *hogy* *az* *én* *ebédemet*   *ette*   *meg.*
    obviously that the my lunch.1SG.ACC eat.PST.3SG<3SG PV
    'Obviously it was my lunch (s)he ate'

(8) Optional *hogy*-deletion:

  a. *Azt* **_hittük,_**   **_hogy_** *itt* *tilos* *a* *dohányzás.*
    that.ACC believe.PST.3SG<1PL that here forbidden the smoking.
  b. *Azt* *hittük,*   *itt* *tilos* *a* *dohányzás.*
    that.ACC believe.PST.3SG<1PL here forbidden the smoking
    'We thought that smoking was forbidden here.'

(9) Unmarked object:

  a. *Levittem*   *a* **_kutyám-at_** *sétálni.*
    take.PST.3SG<1SG the dog.1SG-**ACC** walk.INF
  b. *Levittem*   *a* *kutyám* *sétálni.*
    take.PST.3SG<1SG the dog.1SG walk.INF
    'I took my dog for a walk'

(10)   Compounds of the type noun+verb:

    a.   *Holnap   egész   nap   **ügyeket**   **intézek**.*
          tomorrow   whole   day   affair.PL.ACC   manage.PRS.1SG
    b.   *Holnap   egész   nap   ügyintézek.*
          tomorrow   whole   day   affair.manage.PRS.1SG
          'I will be managing affairs tomorrow the whole day.'

(11)   Unmarked plurality of the possessor on the possessee:

    a.   *A   gyerekeknek   nincs   **étvágy-uk.***
          the   children.DAT   not.exist   appetite-**3PL**
    b.   *A   gyerekeknek   nincs   étvágy-a.*
          the   children.DAT   not.exist   appetite-3SG
          'The kids have no appetite'

The first three phenomena represent different types of article drop. The Hungarian definite article *a/az* emerged during the Old Hungarian period through the functional split of the distal demonstrative pronoun *az* 'that', a grammaticalization change that was attested in various languages (Heine & Kuteva 2004, Harris & Campbell 1995, Givón 2001). Its use displays gradual extension during Old Hungarian, appearing in more and more grammatical contexts where it marks definiteness (I. Gallasy 1991, 1992, Egedi 2014).

However, in the test we looked at examples which could (theoretically) be interpreted as a change in the opposite direction:[6] the article does not appear in environments in which it would be compulsory, or at least preferable in MSH. One such example was observed by Nádasdy (2008), see (12).

(12)   *Nyugatiba   bejössz* […]
     Western.ILL   drop.in.PRS.2SG
     'You come into the Western (Railway Station)'

With respect to example (12), Nádasdy claims that while this form does not confirm to MSH (and one reason for this is the lack of the article before *Nyugati)*, it is still generally observable in spoken language, and the environment that might trigger article drop is the sentence-initial position of the noun. We decided to test two aspects of this phenomenon, one of them being sentence-initial position (following Nádasdy), and the other the category of names of institutions (whether these show some tendency to be used without an article). In addition, we added sentences including nouns in medial position with or without articles as a third type. Naturally, the latter is too broad a category to be tested in general, therefore, we selected sentences to be tested in which we happened to observe article drop ourselves (e.g., the article-less version of example (3) was observed by the authors in spontaneous communication, although as native speakers we would strongly prefer the variant with the article).

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    6   However, it is almost impossible to investigate whether in these specific instances the use of the article had already been general, and the drop of the article is a further change, or there has always been a significant amount of variation, and, due to so far unknown reasons, the more archaic, article-less pattern started to spread in MSH.

Sentences 4-8 all target the presence or absence of *hogy* 'that'. This is the most general subordinator in Hungarian, a complementizer that developed presumably during the Proto-Hungarian period through the reanalysis of the question word *hogy* 'how' in embedded questions or, alternatively, of the pronominal adverbial *hogy* 'as, the way that', which were homophonous at the time of this change (in MSH, the latter is *ahogy;* for a general description of the grammaticalization process, see Haader 1991). Investigation of the earliest sources reveals that by Old Hungarian, the complementizer appears in all of the functions that it has in MSH (Haader 1995, Bácskai-Atkári & Dékány 2014). However, it was not an obligatory marker of finite subordination then, and its use is not obligatory in MSH, either; for an overview of the conditions of *hogy*-deletion, see Kenesei (1992, 673-679).

Out of the three tested environments, one contains examples where the complementizer could be freely omitted in MSH, as in example (8) above. Another tested type was the deletion of the complementizer in sentences in which the verb of the main clause was *lehet* ('it may be'). In contrast to the previous type, the subordinate clause of this matrix verb would necessarily be headed by an overt complementizer (i.e., *hogy*) in MSH. Still, especially in non-formal registers, *hogy*-deletion seems to be spreading. Finally, the last set of sentences that focus on the presence or absence of *hogy* (phenomena 5, 6, and 7 in the test) do not contain matrix verbs at all. The striking feature of the given structure is that there is an adverbial that seems to govern a subordinate clause in this case. This structure was first described in the seventies (see e.g., E. Abaffy 1976), but some highly sporadic instances can be attested already in Late Old Hungarian (Haader 2001). Owing to the truly unique nature of this pattern, there were quite a few attempts to provide a structural analysis and/or an account of its development; these are outlined in the supplementary material, and a thorough review is available in É. Kiss (2010).

Phenomenon 9 pertains to object marking. In MSH, all objects are marked with the accusative suffix *-t* (13a-b).

(13)   a.   *jön*   *a*   *hajó*
            come.PRS.3SG   the   ship
            'the ship is coming'
       b.   *látom*   *a*   *hajó-t*
            see.PRS.3SG<1SG   the   ship-ACC
            'I see the ship'

There is one regular exception: its use is not obligatory with nouns marked with a Sg1 or Sg2 possessive suffix (14b, cf. 14a).

(14)   a.   *jön*   *a*   *fia-m*
            come.PRS.3SG   the   son-1SG
            'my son is coming'
       b.   *látom*   *a*   *fia-m*
            see.PRS.3SG<1SG   the   son-1SG
            'I see my son'

As for the potential factors motivating the speakers to use the unmarked or the marked alternative, their choice seems to be grammatically unconstrained, and neither of the forms is stigmatized or bound to registers. Diachronically, the unmarked accusative

in this case is an archaic feature with parallels from e.g., Eastern Mansi (see Virtanen 2013).

As opposed to the age-old variation observable in phenomenon 9, phenomenon 10 seems to be a recent innovation: a type of compounding in which the first stem of the compound is a noun, and the second is a verb, e.g., *apróhirdet* 'to post small ads', *bájcseveg* 'to do small talk', *agymos* 'to brainwash' (Kiefer 2000, 531). At first sight, these seem to consist of a verb and one of its arguments, the latter losing its appropriate morphological marker owing to the process of compounding, e.g., *város-t_{ACC} néz* 'to go sightseeing', lit. 'watches the city'→ *városnéz*. However, this analysis would not be correct: these noun+verb type of compounds are backformations from pre-existing derivations in which the last stem is an action noun formed with the suffix *-ás/-és,* e.g., *apróhirdetés, bájcsevegés, agymosás.* Kiefer (2000, 531) points out that sporadically, some compounds of this type may arise straight from a verbal phrase due to analogy, but this pattern of compounding is not (yet) productive in Hungarian. As these forms are morphologically transparent, all native speakers can interpret (and, theoretically, can produce) the innovative, noun+verb compounds.

Finally, phenomenon 11 is also an instance of long co-existing variants. In MSH possessive constructions the possessor (in all person-number variations) can be either in the nominative (15a) or in the dative (15b). As opposed to the optionality of markedness described above in the case of object marking, variation here is not arbitrary: the different cases are due to the different structures of these two patterns (for a detailed structural description of the possessive constructions, see Szabolcsi & Laczkó 1992).

(15) a. *Péter   ház-a*
　　　　 Peter　　 house-3SG
　　　　 'Peter's house'

　　 b. *Péter-nek a   ház-a*
　　　　 Peter-DAT　 the　 house-3SG
　　　　 'Peter's house'

If the plural third person possessor is encoded as a noun in the dative as in (16), the possessee can either have a singular third person possessor marker as in (16a) (this would be the general type with nominal possessors in the nominative), or it can be marked with a plural third person possessor marker as in (16b) (which would be the general type with pronominal possessors).

(16) a. *a   fiú-k-nak   a   ház-a*
　　　　 the　 boy-PL-DAT　 the　 house-3SG
　　　　 'the boys' house'

　　 b. *a   fiú-k-nak   a   ház-uk*
　　　　 the　 boy-PL-DAT　 the　 house-3PL
　　　　 'the boys' house'

The variation that is characteristic of MSH (as in example (16)) is already present in Old Hungarian (Korompay 1991, 1992), and, naturally, these two forms must have also co-existed between these two periods (Old and Modern Hungarian) as well. This is shown by the fact that, according to the survey of the handbook of normative linguistics (Grétsy & Kovalovszky 1980, 350), representatives of the language reform movement (taking place between 1790-1820 approximately) propagated the exclusive use of the

agreeing form both with the nominative and with the dative possessor, meaning that they must have been aware of the presence of competing variants, i.e., the agreeing and the non-agreeing form. It is also instructive to see how the authors of the handbook of normative linguistics interpret this variation concerning MSH: they note that the use of the non-agreeing form is spreading in MSH, but they also recommend the use of the plural-marked possessee with dative-marked possessors.

3.2   Participants, procedure

The 11 linguistic phenomena described in the previous section were represented by 5 examples in the grammaticality judgment test resulting in 55 test sentences which were presented in pairs and in a randomized order with 55 distractor sentences (that consisted of dialectal forms, cases of free variation in vowel harmony and ungrammatical sentences). 54 adult participants (12 male, 42 female) clustered in three age groups provided data in the experiment: *(17 ≤) x ≤ 21 year olds* (14 participants), *21 < x < 50 year olds* (29 participants), and *50 ≤ year olds* (11 participants). The groups were targeted directly through online social networks and mailing lists.

It was assumed that the evaluation of language variables, i.e., the recognition of the language variables as "correct" or "incorrect" forms should not necessarily require direct introspection (or any reflection on one's own language use). It was suggested that evaluation of correctness automatically involves one's own language norms in naïve speakers without further suggestion. Additionally, it was also desirable to reveal the relation of the two competing variants very clearly, that is, to see whether the acceptability of one variant arises at the expense of the other, or whether the two variants are accepted simultaneously and to categorize the fine scales of acceptability (obtainable for instance by means of a Likert-scale) into clear groups of acceptable and non-acceptable language forms, as this is an inevitable requirement for the use of the IAT. Last but not least, it was important to make sure that participants do not assess any other features of the tested sentences, but the phenomena in question. These aims were achieved by the following features of the questionnaire used in the experiment.

First, the attention of the participants was focused on the tested linguistic phenomena by presenting the contrasting sentences in pairs. Second, we excluded any aspect that might elicit any self-report (on the participants' own language usage) and its conflict with the participants' supposed language norms, while forcing them to give categorical answers: the task was narrowed down to answering the simple question which of the two sentences the participants found to be correct (possible answers: a) *first,* b) *second,* c) *both – with the same meaning,* d) *both – with different meanings,*[7] or e) *I do not know).* At the end of the questionnaire the participants answered some demographic questions (age, gender, education, etc.) and they could also add further comments. In the analysis no other demographic features but age were directly used, the rest of the responses were merely checked to assess the reliability of the grammaticality judgments. The survey was administered through the internet.

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[7] The categories *both – with the same meaning* and *both – with different meanings* were not considered to be reliably reported on by the participants, thus these were collapsed into one category later on in the analysis.

3.3 Results

Figure 2 summarizes the results of the sentence evaluation task in the two outermost age groups (≤ *21 year olds* and *50 ≤ year olds*).
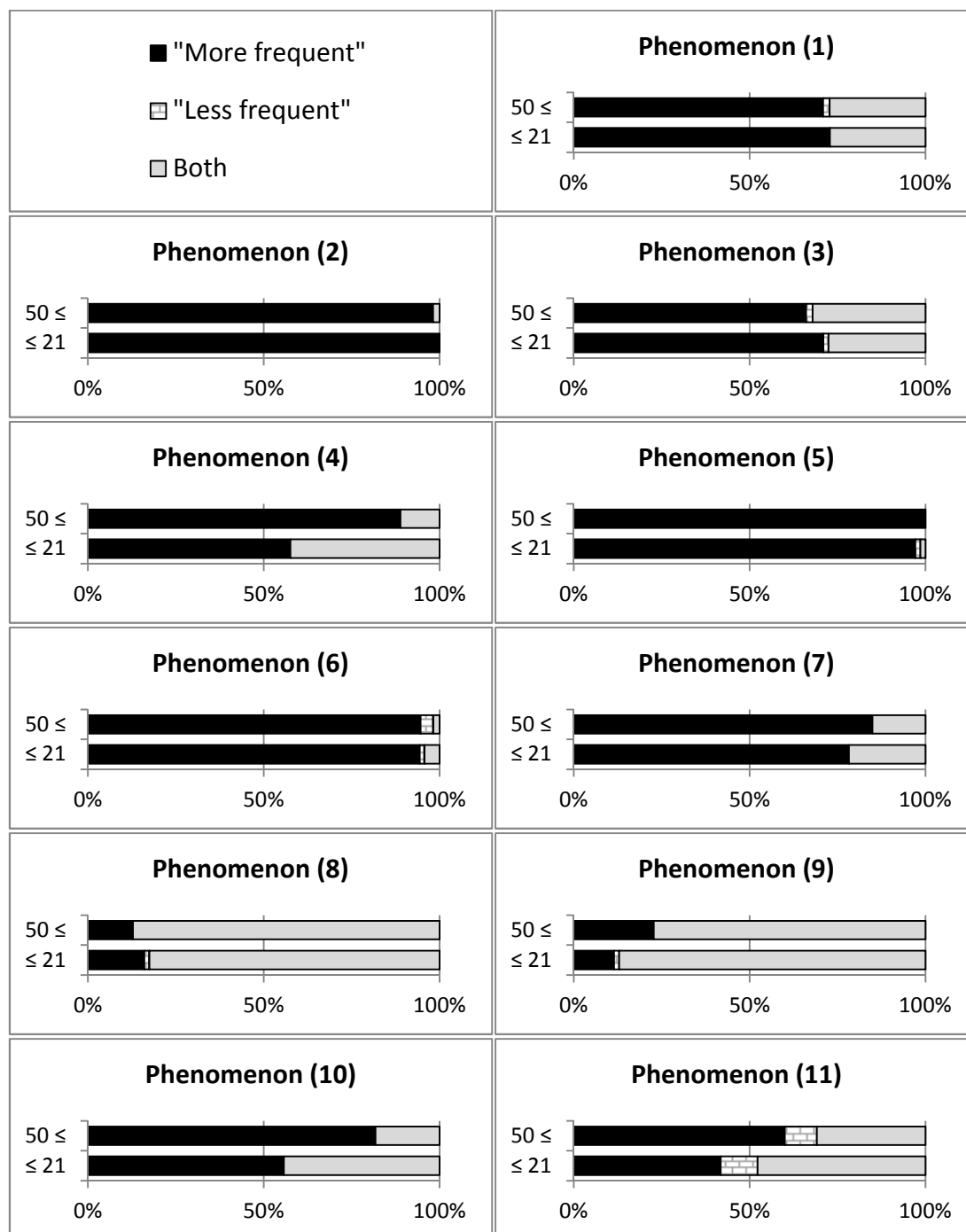

Figure 2: *The evaluation of the 11 phenomena (i.e., 22 contrasting sentence pairs) in the youngest and oldest age group (answering the question "Which of the two sentences do you find to be correct?"). The label "more frequent" refers to the results of the corpus analysis (see Section 3.1 and the Supplementary Material)*

Concerning the potential spread of a less frequent form, clear evidence for this was found only in three cases: (4) *("Lehet, hogy… /Lehet…")*, (10) (e.g. *"ügyeket intézek/ügyintézek"*), and (11) (e.g. *"a gyerekeknek nincs étvágyuk/étvágya"*). At first it appears that (11) is very similar to (4) and (10). However, its case is most probably different from the other two phenomena, since (11) is the only phenomenon in which the exclusive acceptance of the less frequent form can be detected in a notable percentage (in almost 10% in both age groups).

Although it is not visible in the graphs, according to post-questionnaire comments of some of the participants (10) also turned out to be an "outlier" in some sense. It is clearly seen in Figure 2 that the younger group accepts the "less frequent" variant of (10) to a larger extent than the older group. However, according to their remarks, the participants do not accept the "less frequent" variant due to it being "innovative", but rather because of a "difference in style" (relative to the phrasal expression). Namely, some participants noted that they found the "less frequent" forms of (10) to be funny expressions which they regard as correct if used only in jest (in joking, teasing or other highly informal or intimate interactions). The perceived stylistic difference was noted by participants from both age groups.

Phenomena related to article deletion (1), (2), and (3) seem to behave similarly to each other with respect to grammaticality judgments. However, (2) shows a different pattern than that of (1) and (3), i.e. proper noun phrases behave differently from common noun phrases with respect to the deletion of the definite article. It appears that deletion of the definite article of proper noun phrases (where the noun refers to institutions/buildings) is the least accepted phenomenon observable in everyday speech among the tested variables, along with (5), (6) and (7), i.e. the cases concerning the presence or absence of the subordinator *hogy* in sentences with a sentence adverbial.

The results for (8) and (9) suggest that optional *hogy*-deletion and marked versus unmarked object are examples of variables with widely accepted variants (the less frequent forms and the more frequent forms were equally accepted by 80% of the informants in both age groups), therefore, these forms most probably display stable variation.

As phenomena (10) and (11), as discussed above, turned out to be more challenging to interpret, it was only phenomenon (4) that was chosen for further analysis. The data were re-grouped into 3 age groups ≤ *21 year olds, 22 < x < 45 year olds,* and *45 ≤ year olds* that are more well-balanced in number (14, 24, and 16 participants respectively), to control for the effect that may be introduced by count differences of the original groups. As can be seen on Figure 3, the less frequent and most probably also innovative form *("Lehet")* of phenomenon (4) is regarded as correct in less than 10% in the oldest age group *45 ≤*, while both variants are accepted in more than 55% in the group *21 < x < 45*, as well as in the youngest age group *(≤ 21).*
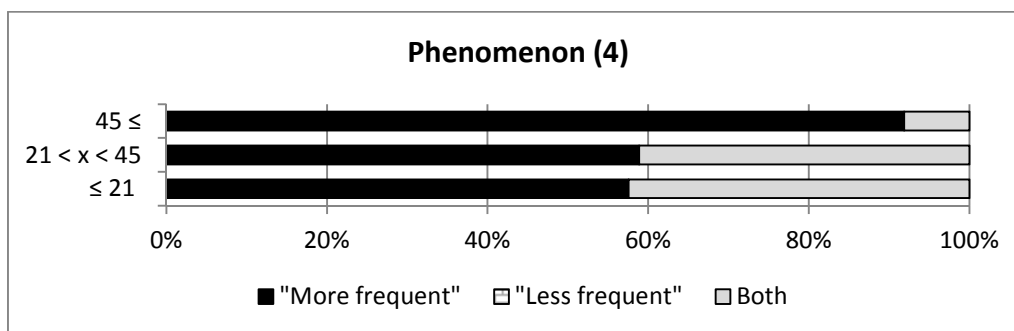
Figure 3: *The evaluation of the sentences of Phenomenon (4) (answering the question "Which of the two sentences you find to be correct?") if the data are grouped into 3 age groups 21 ≤ year olds, 22 < x < 45 year olds, and 45 ≤ year olds that are more well-balanced in number (14, 24, and 16 participants respectively)*

3.4 Conclusions

We may draw the conclusion that, as expected, only some of the tested phenomena showed a shift in the apparent time, i.e., only some of the phenomena proved to be a diffusing innovation spreading. Concerning phenomena (1), (2), and (3), neither the corpus query nor the test data seem to confirm the authors' observations that article drop would be an innovation that is spreading in the speech community. However, we would still like to suggest that article drop in certain structural configurations is an innovative form, the presence of which is attestable in the vernacular. It should be kept in mind that while the grammaticality test was conducted in written form, these phenomena and linguistic innovations generally and mostly are observable (first) in informal and spontaneous speech. Therefore, it is very probable that our findings, i.e., the fact that informants do not seem to accept this "innovative" variant in written form, are only indicative of the acceptability of this variant in the given modality, i.e., writing. On the very same basis, however, "less frequent" variants that show greater acceptance in the younger age group under these circumstances may be more reliably considered as linguistic innovations, since, again, they provide evidence for relatively high percentages of acceptance despite the unusual modality.

Based on the reasons discussed above, the second, and most important conclusion of Experiment 1 is, that the *'Lehet…'* variant of phenomenon (4) *("Lehet, hogy…/Lehet…")* is a linguistic innovation that clearly shows greater acceptance in the younger age groups.

According to an evolutionary account (see e.g. Labov 1972, Croft 2000) the differences found between (4) and (11), or (10) and (11) may be interpreted as follows. Consider phenomenon (11) first. The data show that the two competing variants are not just equally accepted, but for some speakers, the new variant has already overridden or replaced the other. If the "less frequent" variant is taken to be an innovation, this reflects that language change has progressed further with regard to (11) than with other phenomena. If, however, one considers this issue from a diachronic point of view, the putative innovative (less frequent) variant is in fact the more archaic member of this pair. In view of the ubiquitous but so far mostly unexplored fluctuation in the distribution of the two forms in throughout the history of Hungarian, we found it necessary to avoid categorization in this case.

The judgments of (8) and (9) provide examples of stable variation. Similar rates of acceptability of "less frequent" and "more frequent" variants support this interpretation.

Phenomenon (10) also showed differences in the acceptance in the apparent time. However, it was also noted that the "less frequent", or, so to speak, innovative variant of this phenomenon was also perceived very different in style or register.

On the basis of the findings discussed above, we concluded that phenomenon (4) may be regarded as the optimal input construction for the LI-IAT, as only this variable showed a clearly identifiable innovative and conservative variant. Therefore, throughout the rest of this paper, as well as in the construction of the LI-IAT, we focused on phenomenon (4), *"Lehet, hogy…/Lehet…"*. In the next section we describe how the auditory LI-IAT is built and present some data gathered by this new tool.

4   Experiment 2

Traditionally, IAT is (mainly) used for the detection of stereotypes and prejudice against such stereotypical groups as African Americans/white Americans, overweight people/thin people, or heterosexuals/homosexuals. Therefore, the traditional IAT can make use of the stereotypically available representations of the opposing groups: faces, names or words that are (again, stereotypically) associated with the contrasting concepts. In a language attitude IAT, however, where innovative and conservative language forms (and language users) are to be assessed, there is no obvious conceptualization or visualization available that would unequivocally identify the contrasting variables. There is a possibility to use arbitrary visualizations, like pictures of younger "innovative" speakers and older "conservative" speakers. However, it can easily introduce some undesired artifact or bias to the results that cannot be controlled for in any way, since it is most probably the positive/negative attitude *towards the particular faces* that would be measurable in a design where compatibility (i.e., the association of an innovative form with the assumed innovative speaker's picture) cannot be taken for granted. One side of the problem is also known as the 'halo effect', i.e., the problem that beauty biases our perception in a manner that we make choices or decisions in favor of the thing we are attracted to. Another side of the problem using faces for visualization of speaker groups is complexity, as people are a collection of features and also of several stereotypes (in connection with ethnicity, gender, hair style and color, age, skin, etc.) at the same time. As a result, the stereotype activated in a given situation (and for a particular listener) may not be easily inferred and cannot be easily controlled for either (see MacFarlane & Stuart-Smith's review on the topic in MacFarlane & Stuart-Smith 2012). Pantos and Campbell-Kibler provided positive evidence for the possibility to use metalinguistic expressions to mark contrasting variants, like labels of *American* versus *Foreign* (Pantos 2010) or –IN versus –ING (to express differences between examples, like *talkin'* vs. *talking*) (Campbell-Kibler 2012). Luckily, the use of abstract metalinguistic expressions is also a good solution to substitute arbitrary visualizations in the case of the present study.

In order to identify the proper meta-linguistic category labels for the contrasting linguistic forms of the LI-IAT, we conducted a pre-test involving 46 participants (not reported here in detail). In this first attempt the category labels *newer* and *older* were tested. The result showed that these category labels do not sufficiently cover the innovative and conservative variables, as participants assigned these labels to both of the members of the contrasting pairs equally (in approx. 50%). Therefore, for the construction of the LI-IAT we finally opted for using a more direct representation of the variables at hand by

assigning the conservative and the innovative target label categories LEHET, HOGY (POSSIBLE THAT) and LEHET (POSSIBLE) to the members of the contrasting pair in the LI-IAT.

The aim of Experiment 2 was to create the LI-IAT with the variable *"Lehet, hogy…/Lehet …"* selected in the previous experiment, to observe the distributional characteristics of its outcome measure, and investigate the characteristics of the captured aspect of implicit attitude. We intended to evaluate any design-related biases of the LI-IAT that can be observed, and to raise questions regarding possible interpretations of the data (D measures) in the measurement of innovative implicit language attitude. Traditionally, D measures are interpreted as preference for one category over the other ($D \geq .15$ and $D \leq -.15$) and the lack of preference ($-.15 < D < .15$) which will also be analyzed here, in Experiment 2. However, in the present paper we must leave it an open question to designate where the exact boundary between the two categories of speakers (conservatives and innovators) should be drawn on the D measure continua (from -2 to $+2$). It is clear that this question should not be (moreover, cannot be) answered based on IAT data alone, but needs an extensive amount of follow-up research: one must correlate the LI-IAT data with many sets of linguistic data on variants that may be considered innovative and analyze these correlations very thoroughly. For the time being, we chose the following course of action. First, we merely adapted the traditionally used effect size criteria and designate conservatives by having at least a weak preference for the conservative variant of the language variable ($D \geq .15$), while we designate innovators lacking this preference ($-.15 < D < .15$) or having preference for the innovative variant ($D \leq -.15$). Second, we investigated interrelations of implicit attitude (detected by the LI-IAT) with age, and gender. Third, we studied interrelations between explicit and implicit attitude (detected by the LI-IAT) to see if we find converging implicit and explicit measures as observed by Pantos (2010) and Pantos and Perkins (2013). Fourth, we assessed if there is any bias observable in the functioning of the LI-IAT by testing whether the data show normal distribution.

It is very important to emphasize here again that in the present paper and in this adaptation of the IAT, implicit innovative linguistic attitude is basically defined as implicit (or automatic) perceptual preference, and that in this study we do not intend to create a test that predicts a speaker's use of the linguistic variant built in the LI-IAT. Additionally, we also cannot venture to clarify the exact interpretation of D measures without a substantial amount of further empirical work. Finally, it is important to note that auditory IAT is an already validated and even standardized technique, and thus its adaptation using new variables (that is, new categories and items) should also be regarded as valid.

4.1 Methods

To gain a first impression on the nature of the output of the LI-IAT, we collected and explored data from 40 adult informants (11 men, 28 women, 1 unknown due to missing data), including 12 informants who also participated in Experiment 1. The exploratory analysis involved the followings.

First, it was tested whether the obtained D measures follow normal distribution by the use of Shapiro-Wilk test of normality in R (R Core team, 2013).

Second, the implicit measures (D measures) were compared with two types of explicit measures: *explicit evaluation* and *self-reports*. The first explicit attitude measure was derived from sentence evaluation responses for the five example sentences of the

variable *"Lehet, hogy…/Lehet…"* obtained in Experiment 1. The evaluative responses were converted into (nominal) explicit attitude measures on the basis of the number of accepted variants: if the participants preferred the conservative variant over the innovative variant exclusively more than 2 times (out of the 5 cases), they were labeled as conservative speakers. Otherwise, they were labeled as innovative speakers. We contacted again those volunteers who provided their email addresses for further research in Experiment 1 and asked them to participate in Experiment 2 as well. Eventually, 12 volunteers (4 men, 8 women) participated again, thus their data were analyzed in the first comparison (i.e., comparison between evaluative responses as explicit measures and implicit measures). The second type of explicit measures consisted of self-reports that were obtained in Experiment 2: after finishing the IAT, participants were asked to answer some basic demographic questions again, as well as two questions on their language attitude used previously by Mády (2010). Participants were asked to indicate their agreement with the following statements by means of bipolar questions (possible answers: *yes* or *no*):

1. *"Mindig nagyon figyelek arra, hogy szépen, érthetően beszéljek."*
   'I always pay particular attention to use correct pronunciation'
2. *"Szerintem a túlzottan pontos kiejtés mesterkélt, nem illik a mindennapi beszédhez"*
   'I think that overly accurate pronunciation is mannered and is not appropriate for everyday speech'

Agreement with the first statement was regarded a statement of conservative explicit attitude, while agreement with the second statement was regarded a statement of innovative explicit attitude. Participants who agreed or disagreed with both statements were excluded from the comparison. There were 27 participants in Experiment 2 who provided different answers for the two explicit questions, thus only this group of 27 informants was eligible for this comparison. In the analysis no other demographic features but age and gender were directly used, the rest of the responses were merely used to cross-check the reliability of data collection.

Third, to describe age and gender distribution of conservative and innovative groups, we grouped the data of the 40 participants into conservative ($.15 \leq D$) and innovative ($D < .15$) speakers.[8]

In the present study, when creating the LI-IAT, the traditional IAT design was used, five block types and seven blocks total: in Block 1 participants sorted target items (POSSIBLE THAT vs. POSSIBLE) and learnt the hand-side assignment; in Block 2 they sorted attribute items (GOOD vs. BAD); in Block 3 target and attribute items were mixed, to be sorted simultaneously (POSSIBLE THAT OR GOOD vs. POSSIBLE OR BAD or vice versa, it was balanced equally in the test which of the two possible combinations came first in a particular informant's case); in Block 4 the task of Block 3 was repeated; in Block 5 participants learned the inverse hand-side assignment of target categories; in Block 6 the participants were to sort items according to the second combination of attribute + target categories; and finally in Block 7 the task of Block 6 was repeated (see Figure 1).

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[8] It is emphasized here again that in the present study, innovative speakers were designated according to the traditional effect size criteria and on the basis of lacking the implicit perceptual preference for the conservative variant.

For attribute categories the labels JÓ 'good' and ROSSZ 'bad' were used and words with positive and negative valence[9] were selected as items (8 item per attribute category). For attribute and target items used in the LI-IAT see Figure 4.

Items belonging to the attribute categories were presented visually as words appearing in the middle of the screen. The target items consisted of 8 sentence pairs in which the members contrasted only in the linguistic variable *"Lehet, hogy…/Lehet"*. The target stimuli were recorded previously, uttered by a female speaker capable of producing natural sounding, uniform intonation across the two (innovative and conservative) versions of the same sentence. Hence the target items were presented as audio stimuli, while during each auditory trial the visual prompt *"Hang – Kattintson!"* 'sound – please click!' focused the attention of the participants to the recording and also reminded them to sort the item into the correct category. As usual in an IAT, to calculate *D* measures *congruent* trials and *incongruent* trials had to be designated. Since according to the authors' impression conservative language attitude is a commonly experienced explicit attitude bias, conservative attitude (i.e., strong association between the conservative form POSSIBLE THAT and the attribute category GOOD) was designated as congruent trial. To control for any seriality effect, the order of congruent and incongruent blocks was randomized according to the randomly generated participant ID: for even numbers congruent trials came in Block 3 and 4, while for odd numbers incongruent trials came in Block 3 and 4.

The LI-IAT tests were administered via internet; stimuli presentation and recording of the data were both controlled by a script created in Inquisit 4 (Millisecond Software LLC). In the Inquisit 4 software, the measurement precision of RT is ensured by Java Network Launching Protocol (JNLP) which installs a small Java program on each participant's computer in order to run the actual study task. Therefore, RT data are not gathered directly through the internet, but on each participant's computer and they are only transferred to the web store after the task is completed. As a result, this method enables the implementation of reaction time tasks with reasonable precision (Maniaci & Rogge 2014).

D measures were calculated according to Greenwald et al. 2003 (see also Section 2.3 of the present paper); trials greater than 10,000 ms were automatically deleted. Since attribute items were presented visually (as strings), and target items were presented auditorily, modality switch was introduced into the paradigm. Please note, however, that all the previous auditory IAT studies used the same design (Vande Kamp 2002, Pantos 2010, Campbell-Kibler 2012), thus auditory IAT was originally validated with the modality switch condition.

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[9]   Although in the present experiment we adapted the attribute items that were used also in other studies (see e.g., the Project Implicit at https://implicit.harvard.edu/implicit/) and the synonyms of these words, we also conducted an informal pre-test on the valence of these items (i.e., the intrinsic attraction or aversion toward the concepts) via an email survey with 25 participants. In this test the agreement on the valence of the attribute items was basically 100% and the evaluation was also congruent with our classification of these items (with the negligible exception of 2 unexpected responses in the case of *fájdalom* 'pain', and 1 unexpected response in the cases of *gonosz* 'evil', *félelem* 'fear', *gyötrődés* 'torment', *szörnyű* 'horrible').

Categories (and category labels)	Items
Target LEHET 'possible'	*Lehet szerzek én is.* 'It is possible (that) I will get one as well.' *Lehet megveszem.* 'It is possible (that) I buy it.' *Lehet kutya volt.* 'It is possible (that) it was a dog.' *Lehet nincs is.* 'It is possible (that) there isn't any.' *Lehet bent maradok.* 'It is possible (that) I stay inside.' *Lehet rosszul láttam.* 'It is possible (that) I had it mistaken.' *Lehet kitöltöm én is.* 'It is possible (that) I will also fill it.' *Lehet így marad.* 'It is possible (that) it stays at is.'
LEHET HOGY 'possible that'	*Lehet, hogy szerzek én is.* *Lehet, hogy megveszem.* *Lehet, hogy kutya volt.* *Lehet, hogy nincs is.* *Lehet, hogy bent maradok.* *Lehet, hogy rosszul láttam.* *Lehet, hogy kitöltöm én is.* *Lehet, hogy így marad.*
Attribute JÓ 'good'	*Vidám* 'joyful' *Csodálatos* 'wonderful' *Béke* 'peace' *Szabadság* 'freedom' *Boldog* 'blissful' *Öröm* 'happiness' *Szépség* 'beauty' *Szeretet* 'love'
ROSSZ 'bad'	*Gonosz* 'evil' *Rettegés* 'horror' *Gyötrődés* 'torment' *Szörnyű* 'horrible' *Szomorú* 'sad' *Félelem* 'fear' *Borzasztó* 'terrifying' *Fájdalom* 'pain'

Figure 4: *Target and attribute categories and items used in the LI-IAT*

4.2 Results

According to the Shapiro-Wilk test of normality the *D* measure data of the 40 participants followed normal distribution (see Figure 5). As at large number of data normal distribution is expected in an IAT paradigm, this result suggests that the newly created LI-IAT does not introduce a design-related bias or anomaly to the data.
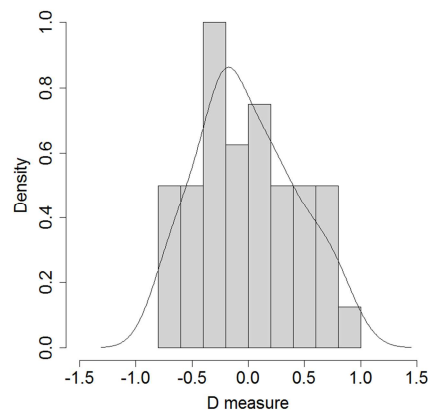
Figure 5: *Distribution of D measures of 40 participants in the LI- IAT*

We obtained explicit attitude measures in both Experiment 1 (sentence evaluation) and Experiment 2 (self-report). We compared both of these data sets with the implicit attitude measurements (*D* measures) obtained in Experiment 2. Figure 6 shows the number of agreement and disagreement between explicit and implicit measures if the separating line between conservative and innovative groups in the implicit test is drawn according to the traditional effect size criteria, i.e., at the weak preference of the conservative form (that is, at .15).
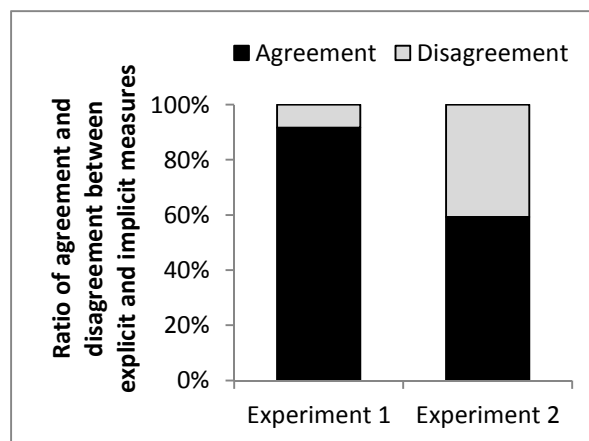

Figure 6: *Interrelations of implicit and explicit attitude measurements as a function of the different types of explicit measures: Experiment 1 – sentence evaluation (12 participants); Experiment 3 – self-report (27 participants)*

There were 12 participants in Experiment 1 from whom it was possible to collect data again, thus the relationship between sentence evaluation and implicit attitudes was assessed based on these 12 informants' data. There were 27 participants in Experiment 2 who provided different answers for the two explicit questions, thus the relationship between self-report and implicit attitudes was assessed based on these 27 informants' data. As opposed to the findings of Pantos (2010) and Pantos and Perkins (2013) (and e.g., Mády 2012 who measured implicit attitude towards substandard linguistic forms), explicit and implicit attitude did not differ to a great extent in our data (i.e, the ratio of agreement is relatively high in both comparisons, see Figure 6). However, differences

between the two explicit measures, i.e., between evaluative responses (Experiment 1) and self-reports (Experiment 2) can also be inferred from the data. In the case of twelve participants providing data in both experiments, explicit attitude measures differed highly between the two experiments (in 58%), whereas agreement was found in only 42% between evaluative responses and self-reports.

The interrelations observable in Figure 7 imply that among all the mismatches between explicit and implicit measures it is *implicit innovative language attitude* that is paired mostly with *explicit conservative attitude* (in Figure 7 see *"Denied innovativity"*), while *implicit conservative attitude* is rarely "denied" (i.e., it is rarely matched with explicit innovative attitude, in Figure 7 *"Denied conservativity"*). Also, mismatches of implicit conservative attitude and explicit innovative attitude can only be observed in the self-report measures condition (data from Experiment 2).
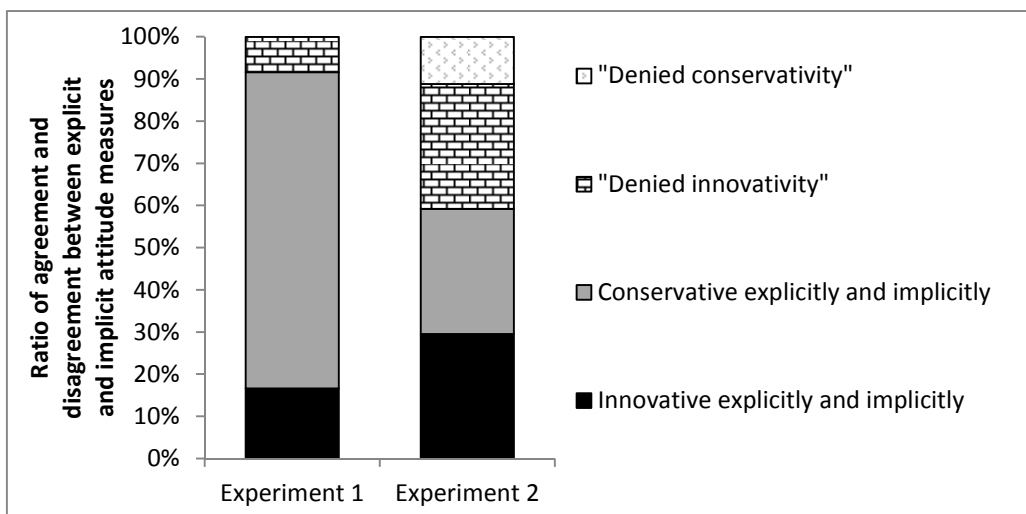

Figure 7: *Interrelations of implicit and explicit attitude measurements as a function of the different types of explicit measures: Experiment 1 – sentence evaluation (12 participants); Experiment 2 – self-report (27 participants)*

Figure 8 shows the age and gender distribution of innovative and conservative speakers designated according to the traditional effect size criteria of the IAT design (separating line of .15, i.e., weak effect in the *conservative* direction). As expected, innovative speakers are more frequent in the younger adult groups, while conservative speakers are found in almost all age groups. As opposed to the expectations, both innovative and conservative groups consist mainly of females, that is, we cannot say that females are more frequent in the innovative group or that females are more likely to belong to the group of innovators. The relations of gender in the two (innovative and conservative) groups also reflect the overall gender hierarchy in the sample: in the randomly sampled subset of the study the male–female ratio is 28% to 72% (similarly to the ratio observable in Figure 8). If we compare the percentage of innovative women (68% of all women) and innovative men (64% of all men), the percentage difference between the two is 4%, meaning that the difference between gender groups is negligible.
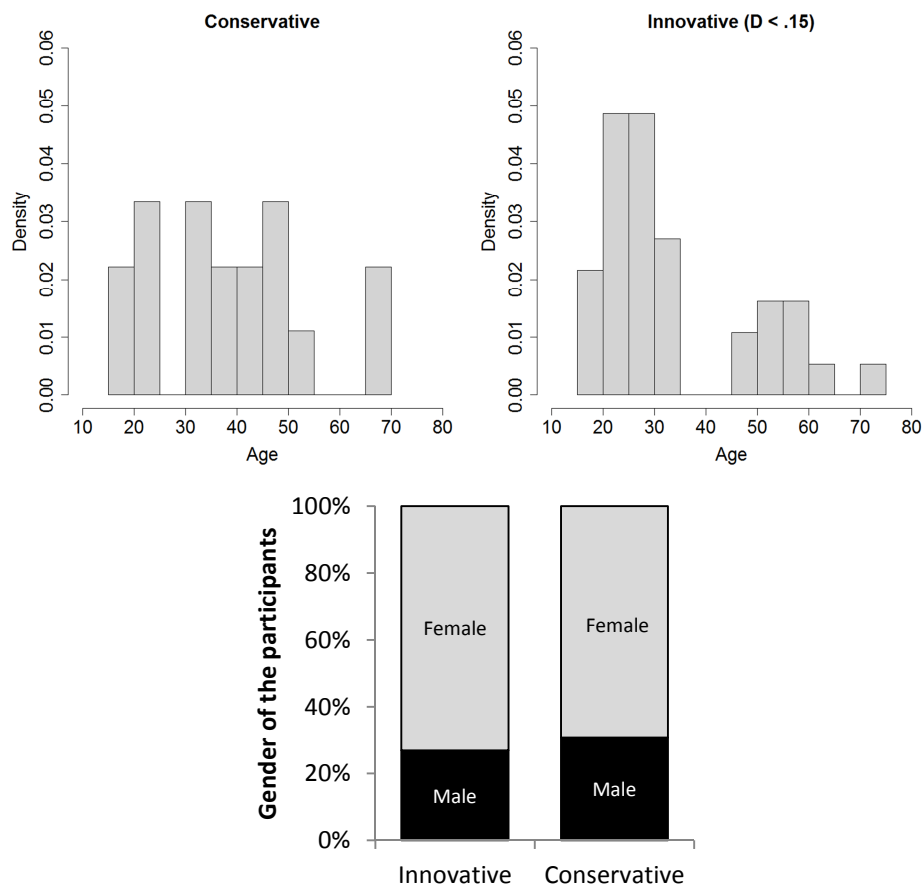
Figure 8: *Age and gender distribution of innovative and conservative speakers*

4.3 Conclusions

The statistical analysis of the obtained *D* measures proved that a randomly sampled group of informants provide data that follow normal distribution, i.e., we may conclude that the newly created LI-IAT appears to show no clear design-related bias.

The agreement between the measured implicit (*D* measure) and explicit (evaluative responses and self-report data) language attitude measures was not in line with some previous findings obtained by using IAT (see e.g., Pantos 2010, Pantos & Perkins 2013) or other techniques (Mády 2012), as in the present study a high ratio of agreement was found. This result might be attributed to several causes, but due to the small number of participants in the groups general conclusions should not be drawn. We venture to conclude, however, that there is a possibility that the extent to which the innovative form *"Lehet…"* is rejected among conservative users is smaller than the extent of the rejection of clearly and more commonly stigmatized (substandard or dialectal) language forms in the same group.[10] Nonetheless, it should be noted that the different types of explicit measurements provided highly different explicit attitude measures, and we should therefore also conclude that one should be cautious about the choice of measurement

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[10] Such as, for instance, the errors, stigmatized forms and variants that are characteristic of spontaneous speech used in Mády (2012), or other variables that are generally said to be examples of stigmatization in Hungarian, e.g., *"innák már valamit"* instead of *"innék már valamit"* 'I really feel like drinking something', or *"majd meglássuk"* instead of *"majd meglátjuk"* 'we will see about that'.

technique and the interpretation of its data in explicit attitude detection. Based on the data on the relationship between explicit and implicit attitude we also see evidence for the common assumption that in most cases it is the innovative implicit attitude that is "denied" or covered explicitly (it is not accessible consciously for self-report, for instance), whereas conservative implicit attitude is in almost all cases paired with conservative explicit attitude.

Although the distribution of age in both the innovative and the conservative groups was in line with traditional sociolinguistic literature and it showed that an innovative attitude is more frequent in younger age groups, the gender distribution showed unexpected ratios, most probably due to the small number of participants in the resulting attitude groups and an unbalanced ratio of men and women participating in the study.

5   General Discussion

The literature of language change indicates that finding innovative speakers in the community is a key issue in the recognition of an ongoing language change. However, the identification of potentially innovative linguistic behavior is a challenging task. In the present paper we discussed the attitude construct and how this concept has been used in linguistic studies so far. We proposed that to solve the above mentioned problem, it is possible to expand the most common (or traditional) interpretation of language attitudes. This way, innovative speakers can be characterized by a specific implicit attitude towards linguistic innovations and linguistic change as such. For the purpose of operationalizing implicit attitude towards linguistic innovations, we proposed to adapt the auditory Implicit Association Test (IAT), a measurement tool of social psychology that uses auditory prompts, and includes a linguistic variable that is subject to an ongoing language change as a test variable (i.e., as target category). We argued that this new test, the LI-IAT, is capable of capturing a specific aspect of implicit attitude towards language change, and thus the LI-IAT measure may be an indicator of potentially innovative linguistic behavior. On this basis we also suggested that the LI-IAT is a tool that enables us to identify potentially innovative language users independently of their demographic characteristics. We proposed that, as a consequence, the LI-IAT may support the reliability of studies concerning the recognition of ongoing language change processes.

The method proposed in this paper, the LI-IAT was based on a test of Mády (2012) that used evaluative responses on substandard linguistic forms, speech errors and particular discourse markers characteristic of spontaneous speech to detect innovative and conservative implicit attitude. In the present study this idea was further developed in two aspects.

First, the efficacy of bypassing conscious control was increased by using a completely implicit task, by using the auditory IAT that uses no explicit evaluation at all, and where implicit evaluative responses are only inferred from reaction time data (i.e., IAT is a semi-online method). To emphasize the benefits of using IAT in implicit language attitude detection, it should be recalled that implicit measures are presumed to be relatively immune from many of the concerns that plague self-report measures. Therefore IAT is especially useful in domains in which social desirability is a concern, as e.g., in linguistic behaviour.

Second, the efficacy of the detection of innovators was increased, as we did not detect the respondents' susceptibility to identify speech errors, stable variations or

substandard forms (as in Mády 2012), but we detected the automatic reactions to an innovative linguistic form, a form that is assumed to be part of an ongoing language change. For this purpose an explicit attitude test was conducted in apparent time. Since it reflects beliefs about standards well, we take this explicit attitude test to be suitable to detect a linguistic variant that may be considered a linguistic innovation both from a diachronic and a synchronic point of view.

In the present study two experiments were reported. In Experiment 1 the linguistic variable was designated for the LI-IAT through an explicit test: 'presence or absence of the subordinator *hogy* in sentences with the verb *lehet*': e.g.,*"Lehet, hogy/ Lehet(,) ő is eljön."* "it's possible that/possible she comes over, too' (in short: *"Lehet, hogy…/Lehet"*, conservative form/innovative form, respectively). The results of the study showed that younger adults accept the second, innovative variant of the variable *"Lehet…"* more than older adults, as the younger group accepted both competing variants in more than 40% of all cases, whereas older speakers accepted the *"Lehet…"* version in only about 10% of all cases. Hence, the phenomenon represented by the *"Lehet, hogy…/Lehet…"* example sentences was considered to be part of an ongoing language change.

The evaluative responses the participants gave on the test variants in Experiment 1 were also regarded as explicit attitude measures and used as such in the analysis of Experiment 2, in order to assess the interrelation between explicit and implicit attitude measures obtained in the present study. In another a pre-test (not reported here in detail) we, amongst others, made a first attempt to search for the sufficient category labels to be used in the LI-IAT to represent innovative and conservative linguistic variants. According to the results, the labels *older* and *newer* are not sufficient for the listeners to differentiate consistently between the two variants of the tested linguistic variables. Therefore, in the construction of the LI-IAT we opted for the use of direct metalinguistic labels similarly to the studies of Pantos (2010), Pantos and Perkins (2013), and Campbell-Kibler (2012).

In Experiment 2 the newly constructed LI-IAT was tested, and some simple explicit attitude measures (self-reports) were also recorded and contrasted with the implicit LI-IAT measures. The analysis consisted mainly of the basic exploration of the attitude construct captured by the LI-IAT. It was observed that the random sample of 40 participants provided D measures with normal distribution which is considered to be an indicator of a reliable data collection. Interestingly, in contrast with some previous findings (see e.g., Pantos 2010, Mády 2012, Pantos & Perkins 2013) the present study showed a high ratio of agreement between implicit and explicit attitude measures (the latter was assessed on the basis of explicit evaluation of example sentences from Experiment 1 and self-report from Experiment 2), while the two different kinds of explicit measures showed also a disagreement to a large extent (in 58%). Therefore, it was also concluded that the acceptability of the innovative *"Lehet…"* is most probably different from the explicitly stigmatized, stereotypical language forms, and that one should be careful when choosing a method for explicit attitude measurements. The age and gender distribution of innovative speakers and the age distribution of conservative speakers found in Experiment 2 met the expectations: innovators were mostly young adults, and females, whereas conservatives were found of almost all ages. Although the gender distribution of conservatives was somewhat unexpected, as innovators were found in both gender groups at almost the same percentage, this result may be due to the not well-balanced number of female and male participants in the study, thus from this finding no further conclusions was drawn.

It must be emphasized again that the proposed interpretation of innovative language attitude, that is, language attitude towards linguistic innovations and language change may not be understood as a direct predictor of innovative behavior in the production of the particular linguistic innovation at hand, as implicit attitudes are never taken as predictors of behavior without further experimental evidence gathered in psychology either. However, this interaction is actually of no great importance, if the measure of implicit attitude is interpreted merely as an indicator of tolerance or acceptance of linguistic innovations as such (and not towards the tested variable exclusively). This way the LI-IAT may be considered to be capable of operationalizing a specific aspect of implicit innovative linguistic attitude that may afterwards be also considered as a possible predictor of (perceptive or productive) innovative linguistic behavior in the case of other (independent) language change processes as an independent variable. In this sense, the LI-IAT measure reflects a particular aspect of implicit innovative linguistic attitude numerically, which is without a doubt a novel approach towards a research method that enables researchers to identify speakers of potentially innovative linguistic behavior.

It should be noted again that the optimal interpretation of the D measure, which is the most common numeric output of an IAT and our LI-IAT as well, has yet to be clarified. This will take with a significant amount of empirical data to be obtained in future research. To understand the nature of the implicit attitude captured by the LI-IAT we need to carry out several thorough empirical studies on language change processes that are already described for contemporary Hungarian where LI-IAT data may be confronted with linguistic data. One of our goals to pursue in the future is to investigate these interrelations, that is, to map the D measure obtained in the LI-IAT onto the innovative behavior observable in the speakers' speech production and perception.

As far as sound change processes are concerned, we plan to conduct a production experiment in which we obtain data by means of elicited speech (in which sound change processes concerning the Hungarian /iː uː yː/ are to be detected), and to redo a previously conducted perception experiment concerning the supposed change in the vowel length oppositions in Hungarian (Mády 2012) using the new LI-IAT for implicit attitude detection. Besides the obvious questions about the interrelation of implicit attitudes captured by the LI-IAT and linguistic data, we will also seek to identify the correct interpretation of the traditional effect size criteria in the present implementation of the IAT. In particular, we aim to answer two questions. First, where to draw the line between innovative and conservative attitudes and speakers. And second, whether the dimension covered by the D measures should be considered to be categorical or rather gradual.

In addition, in future research we wish to map the specific aspect of implicit innovative linguistic attitude captured by the LI-IAT to several types of language change processes (e.g., morphological change, syntactic change, and especially sound change processes) to assess which types of language change this specific aspect of implicit attitude (i.e., the D measure of the LI-IAT) is a reliable indicator of.

There is a lot of potential for using the IAT in studies in language attitude in particular and sociolinguistics in general. One question we also plan to investigate (in line with the ideas behind Campbell-Kilber 2012) is the meaning of stigmatization and the rejection of linguistic innovations by conservative speakers. With the LI-IAT at hand, it is now possible to understand what stigmatization or the rejection of certain linguistic forms means by testing possible hypotheses about their interpretation. In an IAT

paradigm, it is possible to align any type of concept pair. Thus, we may associate an innovative form, such as POSSIBLE and POSSIBLE THAT, with such notions as, for instance, *grammatical* versus *ungrammatical*, and with this type of alignment we actually test a commonly suggested hypothesis of sociolinguistics, namely that conservative speakers find innovative variants ungrammatical. To understand why this hypothesis may be of interest, consider, for instance, explicit attitude tests where it is always presupposed that non-standard forms are in a way "not correct", since stigmatization itself is measured on the basis of evaluation and grammaticality judgments that require participants to qualify test variables as *correct* and *incorrect*. Although this interpretation is often suggested (in some cases implicitly), there is yet no direct evidence for it. By adapting the IAT, however, we can take a step forward to find empirical support for or against this hypothesis.

With the LI-IAT it is also possible to associate innovative and conservative linguistic forms (again, e.g., POSSIBLE and POSSIBLE THAT) with such dimensions as *age* or the scales of *education, socioeconomic status*, etc., thus the stereotypical representations of innovative speakers is also more accessible for investigation than before.

Lastly, to raise further questions that are to be discussed in future research and that are to be kept in mind when using IAT in sociolinguistic research, two remarks from the literature of attitude and IAT measurements are cited from the field of social psychology. Karpinski and Hilton (2001) (as well as Greenwald and Banaji 1995) emphasize that implicit attitude is an introspectively undefined (or inaccurately identified) *trace of past experience* that mediates favorable or unfavorable thought, feeling, or action toward an object. On this basis the *environmental association model* claims that IAT is only able to measure the trace of past experience mentioned above, but we can have no certain knowledge of *how* the thought or action is mediated. Based on this theory, the association strength revealed by the IAT is only indicative of the case that the individual has been exposed to. This could be, for instance, a larger number of positive–*innovative form* and negative–*conservative form* associations than negative–*innovative form* and positive–*conservative form* associations. Karpinski and Hilton also claim the IAT may tell us what associations the person has been *exposed to* in his or her environment rather than the *extent* to which the person *endorses* the attitude. In addition they also claim that the environmental association model posits a dissociation between explicitly measured attitudes and the IAT consistent with Devine's (1989) dissociation of exposure to stereotypic knowledge (which may be measured by the IAT) and personal beliefs (which may be measured by explicit attitude scales). Another aspect to bear in mind is that there is evidence that only relatively spontaneous choices that do not involve a great deal of personal involvement are assumed to be influenced by implicit attitude (Karpinsi & Hilton 2001, cf. Dovidio et al. 1997): attitudes that are measured implicitly tend to predict spontaneous or nonverbal behaviors (blinking, amount of eye-contact), whereas those measured explicitly tend to predict deliberative behaviors (e.g., consumer behavior).

In the present study an IAT measuring implicit attitudes towards linguistic innovations and language change was developed, and we concluded that it is a promising tool in sociolinguistic research. However, it is also intended to remind all the future users of this method (or any other research concerned in the field of attitude) to keep the warnings of social psychology in mind on the yet, to say, still "mysterious" nature of attitude, on the non-trivial interrelations between implicit attitude and action, and on the concerns of attitude detection.

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